ACADEMIC DEVELOPMENT: BRIDGING AT A SOUTH AFRICAN UNIVERSITY

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Doctor of Education

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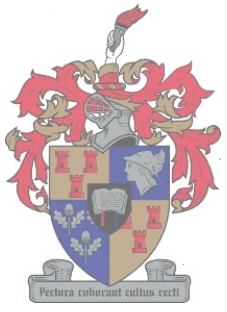

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DECLARATION

I, the undersigned, hereby declare that the work contained in this dissertation is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

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ABSTRACT

In this study two of the academic development initiatives of the University of Stellenbosch, namely the Gencor Bridging Programme (GBP) and the foundation programme (FP) were investigated. The GBP is a four-week bridging programme that is held annually during January, before the start of the academic year. The main purpose of this programme is to channel students into appropriate programmes. The FP forms part of the extended curriculum. Students who participate in the FP follow a programme that is extended over a longer period and provides additional support modules during the first year.

A two-pronged research approach was followed, which consisted of both a quantitative and qualitative investigation. The purpose of the quantitative research was to investigate the influence of the GBP and FP on students' academic performance and persistence. A control group of mainstream students with a cultural and educational background similar to that of the GBP and/or FP participants was used during the quantitative investigation. The aim of the qualitative investigation was to establish how the GBP and FP are perceived by the students and to identify some of the factors that influence student performance both positively and negatively.

The main findings of the quantitative research were that there was no consistent pattern in the fluctuation in students' academic performance at different year levels, and that the influence of the GBP and FP on students' persistence seemed to be positive during the first year, but the long-term influence on student performance could not be established with certainty. The main findings of the qualitative investigation were that students perceived both the GBP and the FP to be of greater social than academic value, and that students relied mainly on peers from their own cultural group for academic and emotional support.

OPSOMMING

In hierdie studie is twee van die akademiese ontwikkelingsprogramme aan die Universiteit van Stellenbosch ondersoek, naamlik die Gencor Brugprogram (GBP) en die Basisprogram (FP). Die GBP is 'n vier week lange oorbruggingsprogram wat jaarliks gedurende Januarie aangebied word, voordat die akademiese jaar 'n aanvang neem. Die hoofdoel van hierdie program is om studente te adviseer en in gepaste roetes binne programme te kanaliseer. Die FP vorm deel van die uitgebreide kurrikulum. Studente wat aan die FP deelneem, volg 'n program met 'n verlengde tydsduur en met hulpmodules wat aangebied word gedurende die eerste jaar.

'n Tweeledige navorsingsbenadering is gevolg, wat beide 'n kwalitatiewe en 'n kwantitatiewe ondersoek behels het. Die doel van die kwantitatiewe navorsing was om die invloed van die GBP en FP op studente se akademiese prestasie en op retensie te ondersoek. 'n Kontrolegroep hoofstroomstudente met 'n kulturele en skolastiese agtergrond soortgelyk aan die van die GBP- en FP-studente is gebruik tydens die kwantitatiewe ondersoek. Die doel van die kwalitatiewe ondersoek was om studente se persepsies van die GBP en FP te bepaal en om sommige van die faktore wat akademiese prestasie positief of negatief beïnvloed, te identifiseer.

Die belangrikste bevindinge van die kwantitatiewe navorsing was dat daar nie 'n vaste patroon in die fluktuasie van studente se akademiese prestasie in die verskillende jaargange is nie, en dat die invloed van die GBP en FP op retensie positief skyn te wees gedurende die eerste jaar. Die langtermyn invloed op akademiese prestasie kon egter nie met sekerheid bepaal word nie. Die belangrikste bevindinge van die kwalitatiewe ondersoek was dat studente van mening was dat beide die GBP en FP groter sosiale as akademiese waarde het, en dat studente op vriende binne hul eie kultuurgroep staatmaak vir beide akademiese en emosionele ondersteuning.

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CHAPTER 1

PROBLEM STATEMENT AND PROGRESSION OF THE STUDY

1.1 Introduction

Many of the students from historically disadvantaged communities in South Africa who gain access to higher education are academically under-prepared. This has been caused by the division in the South African education system since the beginning of the 20th century, and the consequent disparity in the provision of education to the various population groups (Craig & Kernoff, 1995:24; Department of Education, 1997:8).

Since the early 1990s there had been efforts by the African National Congress (ANC) to change the educational system in order to improve the schooling in lower socio-economic areas. With the establishment of the New South Africa in 1994, when the ANC came into power, the new government increased its efforts to eradicate the inequality in the education system. In spite of legislation in this regard, and a unified national Department of Education, the turbulence in education circles did not subside. In many instances the government's actions to bring about equity have not solved, but rather aggravated, some of the most urgent problems in schools, for example the over-crowding and insufficient provision of learning materials (Tikly & Motala, 1994:1).

Student unrest and the disruption of schooling over the past decades created a situation that was not only detrimental to all forms of education, but also prevented the fostering of a learning culture in the country. The loss of school days contributed to students' under-preparedness for the final school examination and created a situation that is a breeding-ground for dishonesty and corruption in the examination process. Consequently the results of the students' final school examination are not always a true reflection of either the students' performance during the examination (Hartshorne, 1992:84; Miller, 1992:98), or of their potential.

Due to all these factors, students enter the higher education environment with different levels of academic preparedness, and with unequal chances of success. Apart from the

economic and possible psychological implications for the student of failure or early departure, a high rate of attrition also has negative implications for the institution. Both the reputation and the financial position of the institution suffer when many students drop out of the system without obtaining a qualification. However, South Africa is not the only country that experiences problems with students' academic under-preparedness and their consequent failure to persist (Smith, 1989:1-5; Osterlind, 1997:ii). The issues surrounding this situation are neither new nor unique to this country.

Efforts by dedicated academics to assist students to improve their learning were reported earlier, but the urgency of the need for formal co-ordinated forms of academic development have only been realised since the 1970s in the United States of America (Tomlinson, 1989:5). It was also during the 1970s that some of the English-speaking historically white universities in South Africa started to address this problem more seriously (CASE, 1993). The question world-wide was no longer *whether* academic development initiatives should be implemented in higher education institutions, but *how*.

Academic leaders and staff began to realise that in order to address the problem of academic under-preparedness effectively, a holistic approach should be followed (Amos & Fischer, 1998:20). This involved changes regarding the student, the staff, the curriculum, and the institution. It was not only the student's responsibility to try to improve, the institution was also responsible for creating opportunities for students which would enable them to succeed. Institutional assessment and transformation became the focus of higher education during the 1980s in the United States of America (Gaither, Nedwek & Neal, 1994:10). The lowering of standards was not an acceptable option, therefore higher education institutions world-wide started to employ various mechanisms which were all aimed at improving students' chances of succeeding.

The University of Stellenbosch officially started an academic development programme in 1994, although there had been earlier, uncoordinated initiatives (see 5.6). In order to improve the students' chances of obtaining a qualification, several options have been considered. Eventually the decision was made to use two main strategies in addressing

the problem of students' academic under-preparedness. The first of these was to extend some of the courses. Instead of the usual minimum duration of a course, it would take under-prepared students a year longer to complete the course. One way of doing this was to divide the first year subjects in such a way that students would meet the full requirements of the academic first year by the end of their second historical year. Another way was to spread the first two years over three years, as was done in the Faculty of Engineering. In addition to this longer course, students would also attend extra course-related classes to provide them with the basic knowledge necessary for the course. The strategy of an extended curriculum is referred to as the foundation programme (FP).

The other strategy employed by the University is a four-week bridging programme, which students attend during January before the academic year of the University opens officially. The bridging programme designed for students enrolled for courses in the Natural Sciences, the Applied Natural Sciences, as well as the Economic and Management Sciences was called the Gencor Bridging Programme (GBP). The main purpose of the GBP is to channel potentially successful students more effectively.

The University also employs other academic development strategies such as a tutor programme, courses in academic language proficiency (English and Afrikaans) and a mentor programme.

1.2 The research problem

The University's aim with all these academic development initiatives is to enable students to succeed in obtaining a qualification. In other words, as a result of these various forms of academic development, students' academic performance should improve to such an extent that they succeed in passing the courses for which they are enrolled. The interventions should also positively influence their decision regarding persistence in the higher education environment. In order to establish whether the purpose of the University with these interventions is fulfilled, the influence of the academic development programmes on students' progress should be assessed. It is also

necessary to establish whether these programmes have any effect on the drop-out rate of the institution.

The implementation and processes of all these academic development initiatives are assessed regularly in order to ensure the continuous improvement of the various programmes. But although the short-term effects of some aspects have been monitored, the total impact of all these academic development initiatives of the University has not yet been tested by extensive empirical research. Neither has the longer term effect of individual programmes been assessed.

The two academic development programmes (ADPs) that are investigated in this study, namely the GBP and FP, have regularly been assessed in various ways. The Division for Academic Development carefully monitors the progress of students who take part in these programmes during their first academic year, and is in the final stages of the development of a computer system which can keep track of the exact academic path of each of the students who participates in the GBP and/or foundation programmes. Annual reports of the Division have presented the detailed results of each year group that participated in the GBP and FP, but also in this case no extensive empirical research to establish the effect of these two programmes over a longer period has been conducted. The purpose of this study is to be a first step in addressing this problem.

1.3 Aims of the study

The impact of any developmental intervention, whether a single event or a series of events, can only be measured over time. The aim of this study is to investigate the GBP and FP as academic development initiatives of the University of Stellenbosch during the period 1995 to 1997. Although these programmes have not been implemented long enough to obtain substantial evidence of their influence on students' academic performance, a secondary aim is to assess the value of the GBP and FP during this period from the students' perspective. It is recognised that there are also other factors that influence students' academic progress at a higher education

institution. A further aim of the study is to identify and assess general institutional, environmental and personal factors that influence academic success.

The focus of the quantitative component of the empirical research was on the performance and retention of students who attended the four-week Gencor Bridging Programme (GBP) and foundation programme (FP) in comparison with that of their mainstream peers. The qualitative research investigated students' perceptions of these programmes as conducted in the Natural Sciences, the Applied Natural Sciences and the Economic and Management Sciences (see 1.4). The objectives of the quantitative and qualitative research components differed, but were complementary.

1.3.1 Objectives of the quantitative research

The objectives of the quantitative research were:

3.1.1.1 to establish how the GBP students' perform during their study years and to identify specific patterns in the fluctuation in students' performance at different *historic* and *academic* year levels.

3.1.1.2 to establish whether participation in the GBP and/or FP possibly influence the retention of students.

3.1.1.3 to get an indication whether the difference in student performance during their study years can possibly be attributed to the nature of the FP in a specific faculty.

3.1.1.4 to get an indication of the influence of the FP on the transition from the first to the second *academic* year;

3.1.1.5 to get an indication of the possible influence of students' participation in both the GBP and FP on completion rates;

3.1.1.6 to compare students' performance during the final matric examination with their pre- and post-test results on the four-week Gencor Bridging Programme.

1.3.2 Objectives of the qualitative research

It is not possible to assess the full impact of any educational intervention by quantitative measures only. Looking at the results of students' academic performance cannot fully describe the influence of the GBP and FP. Therefore it is necessary to go

beyond the quantitative results, in order to gain insight into the possible causes of both good and poor results, as well as of the fluctuation in performance. For this reason the qualitative component of the research was extended to include the students' perceptions of both the GBP and the FP. Because many of the students who participated in the GBP enrolled for an extended course these two programmes were investigated both separately and together.

The objectives of the qualitative research were:

- to gain insight into students' perceptions of the GBP and foundation programmes;
- to identify which factors influence academic progress, either positively or negatively, as perceived by students who participated in the GBP and/or FP.

Both the quantitative and qualitative investigations were targeted at a specific group of students at the University.

1.4 The target population

The target population for this study consisted of students from disadvantaged communities who gained access to the University of Stellenbosch during the three-year period stretching from 1995 until 1997. Only students enrolled in the following faculties were selected, namely Natural Sciences, Forestry, Agricultural Sciences, Economic and Management Sciences, Engineering, Medicine and Dentistry.

The subjects for the qualitative research component were selected only from within the groups of students who participated in the GBP and/or FP between 1995 and 1997. No data was collected from students who enrolled directly into mainstream courses during this time.

For the quantitative research, students who only attended the foundation programme and did not take part in the GBP were left out of the data collection process. This was done because it was necessary to make a comparison between students who were exposed to the academic development activities offered by the GBP well as by the FP and their peers who had no exposure to any developmental intervention.

In order to meet the objectives of the study (see 1.3) the following research approach was followed.

1.5 The methodology

As may be gathered from the objectives of the study, a two-pronged research approach has been followed, namely a quantitative and a qualitative approach. A brief explanation of the methodology used for each approach will be given separately for each phase of the research process.

1.5.1 Data collection

The methods and processes of data collection for the qualitative and quantitative research differed.

1.5.1.1 The qualitative data collection

The data for the qualitative research component was collected by means of interviews and focus group sessions. These were conducted during the second and third terms of 1998. The same interview guide was used during interviews and focus group sessions. Because of some problems experienced during the first interviews with the prompts that had been planned, these were simplified and changed after the first two interviews. To facilitate the discussion about possible factors affecting their progress, students were given a worksheet, with only the keywords *positive* and *negative* influence written on it, from which they could then draw a mind map. Although they discussed their mind maps, there were no names of the interviewees on the sheets, and they were also collected and researcher's notes were made on them after the data collection session.

Tape recordings were made of all interviews and focus group sessions. To encourage openness all were conducted anonymously and students were reassured of the confidential nature of the discussions. After some initial weighing of their words, the students opened up and spoke freely about their experiences.

1.5.1.2 The quantitative data collection

For the quantitative data collection various kinds of records of the students' performance were used. To obtain their matric results and performance during each study year, the academic records which are kept by the University of Stellenbosch of all its students, were consulted. The academic records of mainstream and GBP students were obtained. Every student's aggregate year mark for each of the relevant study years was calculated and these figures were recorded. The total South African Post-Secondary Education (SAPSE) credits required (NATED, 1982) as well as the credits obtained by the student were also recorded. Although the credits were never used in any statistical test, they served as a double check for possible mistakes in the calculation of year marks, as well as to give an indication of incomplete records.

Two sets of matric results were used for the GBP students, namely the average percentage of their performance on all their subjects, as indicated on their academic records, and the average of their Mathematics, Afrikaans and English results, which was calculated. The latter figure was necessary in order to be able to compare an index of matric performance with a similar index of GBP performance. The average of the students' performance on the Mathematics, Afrikaans and English pre- and post-tests was used as the index of GBP performance.

The other kinds of record that were consulted, were those kept by the University's Division for Academic Development Programmes (ADP) of the performance of the GBP students' on all tests and other assessment events during the four-week GBP. Of these only the pre- and post-test results were used.

The whole process of data collection for the quantitative component of the empirical research is illustrated by a flowchart in figure 6.1.

1.5.2 Data analysis

The data analysis of the qualitative research was done simultaneously with the data collection. The quantitative data analysis was done in two phases. The analysis based on the frequency of occurrence was done before the more sophisticated statistical

analyses. The reason for this was to ensure that students who were still in the system, but had changed to a course in another faculty, would not be included in the analysis. This could easily have happened because these students still had performance scores on their student records, but for courses that were irrelevant to the study, such as BA for example.

1.5.2.1 The qualitative data analysis

For the qualitative analysis all tape recordings of the interviews and focus group sessions were transcribed. These transcriptions, together with the researcher's memo's, were used for the analysis. The data analysis process involved three kinds of task, namely the organisation of information and the identification of patterns, the development of ideas and the drawing and verification of conclusions. This process was repeated several times, each time at a higher level. During the first cycle the purpose was to identify obvious themes in each separate faculty grouping, the next round of analysis went beyond the obvious remarks of the students to the implication behind their words. The third round of analysis compared findings across faculties and performance categories, and in the final analysis conclusions regarding the trends and themes which were identified during previous levels of the analysis were verified, and final conclusions were drawn.

1.5.2.2 The quantitative data analysis

All the GBP and mainstream students selected for the study were classified into different categories of performance according to their matric results, and again according to their year mark in each study year. In the frequency analysis the students were grouped together in the various categories and the number of students per category during the different study years was compared.

During the second phase of the quantitative analysis two statistical tests were performed, namely an ANOVA and a Wilcoxon Matched Pairs test (Norisus, 1982:78, 85-86). The data used for the ANOVA was both mainstream and GBP students' performance scores for matric and for each subsequent study year. For the Wilcoxon Matched Pairs test, only a selection of all the GBP students' results was used, namely

their matric Mathematics, Afrikaans and English scores as well as their scores for the same subjects during the GBP pre- and post-tests.

1.6 Definition of terms

Some of the terms used, especially in the literature review, need to be clarified. A brief explanation of the use of each term in the context of the study will be given.

1.6.1 Minority students

In the USA the term *minority students* is generally used to refer to Black, Hispanic, Chicano, Asian and any other students who were not part of the traditional homogeneous student population (Osterlind, 1997:4). The term also refers to the division of the population in numerical terms, in which sense the number of people belonging to the specific group is always a minority section of the whole population.

In the South African context the comparable section of the population forms the majority of the total population. At the University of Stellenbosch this group of students is, however, still a minority group in the total student population, and in this sense one can refer to them as *minority students*.

1.6.2 Bantu, Coloured, Indian and White

The first two terms which are now considered to be offensive, were used historically in South Africa to refer to the black African, and to the brown population groups respectively. Although the term *Bantu* means "people" in Xhosa (Fischer, 1985), it is not acceptable to use the word *Bantu* to refer to African people. In this study the term *Bantu* is still used in the historical overview of South African education, when it is part of a name or is quoted in the formulation of a law. The researcher is fully aware of the sensitivity of issues related to these terms, however, the nature of the investigation necessitates differentiation amongst various population groups. At present there are various interpretations of the terms *African* and *Black* but in this study black African students are referred to either as African students or as black students.

The term *Coloured* is no longer generally acceptable, because of its negative political connotations. Because of the difference in the educational background of African and Coloured students, this term is used in the study whenever it is necessary to differentiate between the two population groups.

Indian is used for the South African population group who originated from India and *White* refers to the population group that is from European, mainly Dutch, English, French and German descent.

1.6.3 Non-white/Non-traditional students

The term *non-white students* refers to students belonging to the Black, Coloured, Indian and Asian population groups in South Africa. *Non-traditional students* is used as an umbrella term to indicate all students who have not traditionally been part of the white student population of the University of Stellenbosch. It is not intended to imply any negative connotation, but is merely used to facilitate the explanation when a differentiation between white and non-white students is necessary.

1.6.4 Drop-out

Drop-out is a term which is used universally for students who have left either the higher education environment or a specific institution permanently. In this study it is used in relation to the second meaning. That is, it does not include the whole South African higher education environment, but only the University of Stellenbosch. Students who left the University and enrolled at another college or university are still classified as drop-outs.

1.6.5 Under-prepared or disadvantaged students

These are very important concepts in the context of this study. The term *under-prepared* is used in contrast to another term, *unprepared*. Students who are under-prepared have the potential to be successful, but do not have adequate academic preparation, mainly due to insufficient schooling, which might hinder them in obtaining a higher education qualification (Craig & Winter 1990:59). Disadvantaged students

refer to students who were exposed to less favourable school and home circumstances which often contributed to their being under-prepared for higher education (Van Heerden, 1997:88). The under-prepared student is the focus of the study and the reason for ADP at the University.

1.6.6 Bridging programme

A bridging programme refers to a series of interventions which is intended to bridge the gap between a students' school education and the academic requirements of higher education. Although the additional courses offered to students on the extended courses are an essential part of a bridging programme, some differentiation between the introductory bridging course and the follow-up support courses in the extended curriculum is necessary to facilitate the discussion. Therefore in all further discussions the term *bridging programme* is limited to mean the four-week intensive bridging programme offered by the University of Stellenbosch during January every year. In this study it is called the Gencor Bridging Programme (GBP). A detailed explanation of the GBP is given in chapter five (see 5.6.1).

1.6.7 Foundation programme

The term *foundation programme* refers to various kinds of learning experiences that are aimed at providing students with the foundational knowledge and skills needed for a specific programme (RSA, 1998:4). These additional learning experiences form part of the extended programme in each of the faculties (see 5.6.2) and are offered in addition to some of the regular main stream modules. *Foundation programme* can be used either as an umbrella term, namely the foundation programme of the whole University which includes various forms of assistance incorporated in the extended programmes in all faculties, or on a smaller scale the extended programme in a specific faculty.

1.7 Focus and position of the study

The focus of the study is on academic development as a mechanism to enable students to succeed in higher education. However, the position taken in this study is that the

student and the institution are co-responsible for effective learning. It is the student's responsibility to devote sufficient time and effort to academic activities and utilise every opportunity in order to develop both cognitively and affectively as much as possible during his/her study years. The final decision to succeed lies with each individual student. The role of the institution is to be accountable to its stakeholders for the quality of its programmes, but at the same time to provide effective educational support systems and create a climate conducive to the development of those essential qualities of the individual that contribute to success in higher education.

1.8 Approach to the literature review and further progression of the study

The approach to the literature review is as follows:

The aim of the discussion in chapter two is to provide some background regarding the present situation in the higher education environment to which students gain access. The questions which are dealt with are firstly, "What is meant by quality and success in the higher education environment?", and secondly, "What factors might prevent students from succeeding and thus influence students' persistence?"

Most of the subjects of this study are products of South African schools. In chapter three special attention is given to aspects of the South African education system which might influence academic achievement at higher education level. In the last part of this section the meaning of a culture of learning is explained. This links on to the next chapter which views successful academic performance from a psychological perspective.

The main issue dealt with in chapter four is cognitive development. Since the non-cognitive side of the human psyche cannot be ignored in a discussion about success and achievement, affective and conative factors, as well as the role of the environment, are considered. Unlike the previous two chapters that both focus on student groups, this chapter deals with the student as an individual who needs to learn and develop.

In chapter five the attention turns to ways in which the higher education institution can enable students to achieve and succeed in the higher education environment. Several teaching and assessment practices are evaluated against the educational goal of student-centred learning and development as outcomes of higher education. A brief description is given of Academic development at South African universities. The chapter ends with a discussion of the GBP and FP as academic development initiatives of the University of Stellenbosch.

Chapter six describes the empirical research. This consists of both a quantitative and a qualitative research component. Both these approaches are described in detail regarding the planning, data collection processes and methods, data processing as well as some of the problems experienced during various phases of the research process. The methods of data analysis of both research approaches are described only briefly, because a detailed description would duplicate information given in a later chapter where the processes are easier to explain. This is done during the reporting of the results of both the quantitative and qualitative research respectively.

In chapter seven the data analysis and results of the qualitative investigation are reported, and preliminary conclusions are drawn from the qualitative research. This is followed by the reporting of the quantitative results in chapter eight. The study concludes with chapter nine in which the final conclusions are drawn, and recommendations are made.

In the following four chapters the literature review will be discussed, starting with the meaning of success in higher education.

CHAPTER 2
SUCCESS IN HIGHER EDUCATION

The purpose of this chapter is to state what is understood by students being successful at a higher education institution and to identify some factors affecting success. In order to achieve this purpose, trends and demands which are continuously shaping the higher education environment are discussed, as well as the student population that now has access to post-secondary education. The need to maintain quality with fewer resources and a more diverse student body is discussed. As alternative to success, students' failure to persist and possible causes of attrition are explained.

2.1 Introduction

Quality and excellence have become key words in the higher education environment during the last part of the twentieth century. These concepts feature as goals in mission statements of universities and, together with the commitment to demonstrate accountability (see 2.2.2), they direct planning and decision-making at various levels in the higher education system. With the traditional approach to determining excellence, the quality of students' academic output was one of the factors that were assessed (Ewell, 1983; Astin, 1993). As an outcomes measure it entailed, at undergraduate level, students' completion rates, that is how many students completed the course for which they were enrolled and obtained the relevant qualification within the minimum time required, as well as the frequency of results within the higher range of academic achievement. This was an acceptable practice while the students who entered higher education were a fairly homogeneous group. The situation has changed, however. The differences in academic and social backgrounds of students who now gain access to institutions result in great variation in quality at the entry (input) level of the higher education process. This change in the composition of student populations necessitates a more developmental approach to excellence (see 2.2.1). With this approach, student success is measured by drawing a comparison between the level of their academic and social preparedness (input) when they enter the higher education institution and the quality of their academic and social achievement at the exit level (output) by the time they leave.

At a time of scarce and continuously declining resources for higher education all over the world (Lewis & Smith, 1994:3; McInnes, 1995:38), and also in South Africa (Department of Education, 1997:33), a completely open and unstructured developmental approach which ignores the duration, completion rates and quality of degrees does not seem economically viable. Therefore, academic success should still be measured by the number of students obtaining a qualification, but with different specified requirements regarding the duration of the course (see 5.6.2), and with various support systems in place, in order to ensure that there will not be a decline in the quality of the end product.

A further aspect that should be considered when a developmental approach is followed in a climate of limited resources, is whether or not the students who gain access to an institution do indeed have the potential to succeed academically in a higher education environment. The focus of this study is to establish to what extent the Gencor Bridging Programme and the foundation programme at the University of Stellenbosch (see 5.6.1, 5.6.2) succeed in identifying and assisting these potentially successful students. A secondary purpose of the study is to identify factors related to this specific academic institution, which might cause attrition. In order to be able to obtain an objective perspective on these factors, it is necessary to evaluate them against the background of general factors in the global higher education environment which cause students to drop out of the system. Before these factors can be discussed, one has to look at the prevalent higher education situation and understand not only what is meant by excellence and quality, but also why these concepts have become so prominent in the higher education arena.

2.2 Higher education today

Over the past thirty years higher education has changed significantly in various ways. The heightened involvement of government in higher education, together with the demands for increased accountability to the community and various stakeholders, has brought new notions of the purpose of universities and what role they should fulfil in society. The decline in government funding, increased student numbers and the diversity of the student population have changed the élitist character of higher

education to a system of mass education (McInnes, 1995:39). The growth in student numbers and diversity regarding their abilities and backgrounds, together with a drop in the number of permanent staff members, has necessitated the use of alternative strategies and mechanisms to ensure effective learning.

One of the most prominent and drastic changes in higher education is the globalisation of knowledge. The shift to technology at various levels within the total functioning of institutions and its application for a variety of purposes, has offered new opportunities for development, but not without their own demands. Apart from having to provide the necessary infrastructure for technology-driven education, institutions also have to organise their academic programmes differently and give much more attention to the administrative and technological support offered to academic staff and students than would have been the case if they merely continued with their regular means of higher education provision. If the necessary infrastructure and support exist the traditional "synchronous single-location" way of learning can be expanded to include "asynchronous networked" learning systems, which are suitable not only to facilitate learning in a student-centred, interactive way, but also for individualised student support (MacFarlane, 1995:62). This new modus of instruction has implications for academic staff, students and the institution. The development and training of academic staff firstly to accept the challenge and be prepared to make the shift to include and integrate technology and, secondly, to acquire the necessary skills which would enable them to include the use of multimedia effectively in their education task, become increasingly important.

There is, however, also a negative side to this technology-driven delivery mode which should be attended to. The change in the nature of the learning environment diminishes the social aspect of learning for students (McInnes, 1995:45). Although the more open and individualised structure of learning has benefits regarding accessibility to a much wider society, the asynchronic character of the learning experience causes student isolation. The informal learning environment no longer exists, and unless some kind of peer learning group is organised by either staff or the students, the learners have no contact with their fellow-students, and consequently their experience of higher education is affected (see 5.2.3.2).

Another strategy that is used to cope with the escalation in student numbers is an increase in the employment of part-time staff. This is necessary in order to be able to manage the curriculum effectively and reduce the excessive workload of academic staff. Inherent in this practice is a threat to the "research-teaching-learning" nexus (McInnes, 1995:46; Clark, 1996:101,102) and the continued distinction of the university as a learning society in which teachers and students meet in their joint search for knowledge. Due to the fact that it is usually only members of the permanent staff who accept responsibility for the planning and continuation of courses, part-time staff end up teaching sections of courses for which they have not accepted ownership. This might have a negative influence on their motivation and decrease the time and effort which they are prepared to put into their research as preparation for teaching. This in turn affects the maintenance of quality.

The task of the university is not only to disseminate knowledge, but also to create new knowledge (Boyer, 1990:27). The tension between pure, basic research (science) and applied research (technology) which existed during the nineteenth century, was drawn into the higher education arena in Germany after World War II (Stokes, 1996:25,26). A clear distinction was made between the focus of research at various types of institutions. Pure science was reserved for universities and research institutions, while technology was the research domain of the *Technische Hochschulen* and industry. Although both science and technology now have their rightful place at universities, a different kind of debate has started. The autonomous decision of academic staff to research topics of personal interest is considered not necessarily to serve the common good and should therefore be replaced by a collective decision to investigate matters which are market-related or in the interest of the whole community (OECD, 1997:7). If this should be interpreted too narrowly, the danger exists that it could stifle innovation, in that the creativity of the scientist could be suppressed by the consideration of application at too early a stage in the research process.

Additional to basic and applied research, another kind of research has become part of the higher education environment since the 1980s (see 2.2.2), namely institutional research. In order to reply to the demand for accountability, universities and other

institutions started to measure various aspects of their total functioning. This was also done to establish their level of excellence.

2.2.1 Approaches to excellence

Institutions of higher education that hold a traditional view of excellence, focus on resources and/or reputation to measure and/or promote excellence (Astin, 1993:4). The *resources* conception of excellence implies that money, highly qualified staff who are widely known for their research and publications, and students with high matric qualifications and who come from affluent families, would determine the status of the institution. The money assets are reflected in the endowments, income from public and private resources, libraries, laboratories, technology and other facilities which the institution possesses. The *reputational* conception of excellence refers to the prestige of the institution, that is, its image in the public eye and where it fits into the hierarchy according to the Harvard, Stanford or Oxbridge image. Although the facilities and infrastructure of an institution are very important for its functioning, the problem with the resources and reputational approach to assessing excellence is that it is essentially static in nature (Gaither, Nedwek & Neal, 1994:18). With this approach the institution's assets and status themselves are measured at a given time, and not how these features are used to promote the purpose of the institution.

According to Astin (1993:6), reputation and resources tend to be mutually reinforcing. They do not, however, directly serve the purpose of the university, namely the education of students and the creation, expansion and development of knowledge. For this reason, Astin proposes a *talent development* view of assessment, which measures excellence according to the institution's ability to develop both its students and its staff to their full potential. With this approach the focus of assessment becomes the difference between the knowledge, as well as the level of development of both staff and students at the time of assessment, compared to what it was when they entered the institution. This implies that excellence will be determined by the quality of the processes within the institution which effects positive change in staff and students. The developmental approach to assessment is in accordance with one of the key principles of total quality management in industry, namely continuous quality improvement (CQI), which focuses on *processes* to ensure quality products (Chaffee & Sherr,

1992:vi,38). It is also the essence of a transformative view of quality which is promoted by, inter alia, the South African Universities' Vice Chancellors' Association (SAUVCA, 1998:89).

If we accept that students are at the centre of the whole higher education system, then the nature, the characteristics and the complexity of the whole education process should remain central to the assessment of the quality of an institution (Barnett, 1995:11). As can be seen from the following discussion, the changes that have taken place in higher education over the past thirty-five years have been to a large extent due to changes in the student population.

2.2.2 Quality, equity and standards

Quality is defined by the Oxford dictionary (1985) as "a degree of excellence", by which the relative and non-static nature of quality is indicated. In the higher education context quality would depend on the standards or criteria set by an institution.

During the 1960s and 1970s the emphasis in international higher education was on equity, access and students' financial needs. These trends continued into the 1980s, but the focus shifted to quality, assessment and accountability (Gaither et al., 1994:10). The controversies surrounding quality and standards have related essentially to expanded student access (Silver, 1986:24) and the tension between equality and quality has become a feature of higher education.

The concern about quality and equity also exists in South African higher education. This is evident from government legislation like the *South African Qualifications Authority Act* (Act no.58 of 1995) (RSA, 1995) and the official rules and regulations for *Education and Training Quality Assurance Bodies* (ETQA) (RSA, 1998). The South African Qualifications Authority (SAQA) has a quality assurance function to ensure the maintenance of education and training standards during the period of transition to an education system in line with the National Qualifications Framework (NQF) (SAQA, 1999:2,3). The objectives of the NQF which include the facilitation of access to education and training, "enhancement of quality", as well as "redress of past unfair discrimination in education" (Elliot, 1999:6) also reflect the concern with quality

and equity. The emphasis on quality and standards is further demonstrated by the structure of the NQF. The two primary implementation functions of the NQF are standards setting and quality assurance (Elliot, 1999:8) with the view that the quality assurance process will start with standard setting and the registration of these standards on the NQF (SAQA, 1999:4).

In spite of this emphasis by government on quality and standards, it is important to remember that it takes time to develop a quality assurance culture in any institution (Bethel, 1992:230). What is considered to be quality and effective measures for quality assurance will depend on the history, traditions and culture of both the country and its higher education institutions. How the purpose and essence of higher education is viewed is also closely related to the approach to quality assessment (Barnett, 1995:7). If, for example, the purpose of higher education is to add value to the economy of the country, the institution would look at the student as a product. The criteria for quality would be how well a programme prepared the student for the labour market and how good a position a graduate from a particular institution could obtain. If, on the other hand, the key purpose of higher education is viewed as the intellectual development and expansion of the student's mind, then the educational processes in the institution will be assessed. In this case the criteria for a programme would be the experiences and intellectual challenges that the students were exposed to, and how well graduates manage to apply the understanding and self-critical abilities they have gained to the experiences of their everyday and working lives.

If, as Voehl (1994:29) proposes, quality is designed into a system, rather than inspecting the system afterwards for quality, it implies that in a university setting, a holistic approach to programme design becomes vital. Care should be taken that the design process should not only focus on relevant modules and content, but also on instructional methods and assessment processes that would promote the development of learners.

With all this in mind, one can look at a contextually acceptable definition of quality for the South African higher education environment. In the context of a developmental approach to excellence (see 2.2.1), as is proposed by this study, the transformative

view of quality, as promoted by SAUVCA (1998:89), seems to be the most acceptable option in the South African context. From this perspective education is seen as an "ongoing process of transformation" which both enhances the student as an educated person and empowers him or her in a holistic way.

There are various alternative strategies to improve quality within a developmental approach. This approach implies a formative way of assessment in which the focus is on the educational process (Barnett, 1995:56; Cosser, Mokhobo-Nomvete & Elliot, 1999:8), and the measurement regarding student progress is a comparison between input and output (Astin, 1991:18). One way to achieve a higher quality of output would be to attempt to improve the quality at the input level. Although this is a typical traditional approach to achieving excellence, increasing the quality of students at the input (entry) level of the educational process will be to the benefit of the institution. This is due to the reciprocal nature of quality of student and quality of the institution. If a diversity of students with higher ability can be recruited, there will be a gain in the perception of prospective students regarding the quality of the institution and this, in turn, will draw a better quality student.

2.2.3 Selectivity and outreach

Students' perception of the selectivity and quality of an institution plays a role in the choice of institutions to which they would apply for access (Hurtado, Inkelas, Briggs & Rhee, 1997:45). This perception about the status of the institution also influences their commitment to the institution, and thus whether they will persist until they have obtained a qualification (Pascarella & Terenzini, 1991:375; see 2.5). Expectations of degree attainment and choice of institution are partly dependent upon students' aptitude and academic preparation (Hurtado et al., 1997:46).

Since the 1980s various types of early intervention programmes have been launched in America to encourage low-income youth to complete high school and continue on to higher education. "Academic outreach" programmes are one kind of early intervention which is operated exclusively by academic institutions and not by the private sector or by community agents (Fenske, Geranios, Keller & Moore, 1997:iii). There are three types of outreach programme which directly or indirectly recruit students for the

institution. These are, firstly, those which follow some strategy to identify talented and potentially successful students among the at-risk high school students and, secondly, those with a "mediation" approach. With the latter strategy, the college or university offers programmes, usually to high school children, which would develop their abilities and skills sufficiently to enable students to succeed at a higher education institution. The third kind of programme "sells" the institution to potential students, either by offering financial aid, or by simply advertising the kind of courses and services offered at the institution (Fenske et al., 1997:56, 57). With the shrinking pool of adequately prepared students, various forms of outreach initiatives will have to be employed by institutions. The earlier the intervention can take place, the better the results would be.

Research by Hurtado et al. (1997:52) found that among non-white students, early (8th grade) high achievers, who persist and complete high school, have the highest probability of attending some higher education institution. These researchers also found that only a relatively small percentage of these potentially successful candidates apply for university access. Since the interaction between institutional characteristics, outreach strategies and students' background, aptitude and activities influence the decision whether or not to enrol for higher education Hurtado et al. (1997:66) recommmend that in order to "capture some of the lost talent", institutions should extend their outreach programmes to younger high school pupils. Although the student population will still consist of individuals with a diversity of social backgrounds and traditions, at least the differences in academic preparedness might be reduced by these outreach programmes.

2.3 The student population

The homogeneity of the traditional student population as a group of middle-class, white, 18 to 24 years olds, who mainly lived on campus and were adequately prepared for post-secondary study, has changed since the 1970s (Garland, 1985:29). First generation students with diverse backgrounds and often inadequate academic preparation have entered the higher education arena. Increasing numbers of older, part-time and commuter students, as well as physically disabled students, now attend universities and colleges. Technological progress continuously opens doors to more

advanced delivery modes, and total or partly virtual campuses are becoming part of the higher education arena (Van Dusen, 1997:113) with an increasing number of students acquiring their education by this means. The diverse student population, with goals, values and needs that differ from those of the traditional student group (Stark, Shaw & Lowther, 1989:1), calls for a re-evaluation of both the purpose of, and various processes within, higher education. These developments necessitate the re-establishing of the role of higher education in society and a re-assessment of existing practices to determine what changes are necessary in order to best accommodate and retain such a diverse student population.

Diverse student populations bring with them a variety of background characteristics, abilities, needs, values and aspirations. Since retention has become an important measure of success (Smith, 1989:29), institutions have become more aware of their own responsibility to employ strategies which might assist students who are at risk of failure. The opportunities offered by the institution are, however, no guarantee that students will be successful. It is what students do with these opportunities which ultimately determines their success (Davis & Murrell, 1993b:14). Although their background characteristics and academic preparation influence students' achievement, it is not so much what they bring to higher education which is important, but rather the total effect of all their experiences in the higher education environment. Both the institution and the student should accept mutual responsibility for the educational process. For the institution to be able to fulfil its part of the agreement, it must be aware of the range and nature of diversity within the student population.

Because an increasing number of students enrolled at the University live off-campus, one specific kind of non-traditional student, namely the commuter student, is singled out for further elaboration in this section.

2.3.1 Commuter students

The traditional residential character of institutions of higher education is gradually changing through availability of access to different kinds of students. Because the policies, programmes and practices of institutions are designed for traditional, residential students very little, if any, special provision is made for other kinds of

students. Various groups of students have been identified as being at risk of attrition, due to the lack of provision for their needs. Commuter students form one of these groups.

Commuter students are defined as all students who do not live in residences or other forms of accommodation owned by the institution (Jacoby, 1989:iii). These include full-time students between the ages of 18 and 25 who live with their parents or in other off-campus, rented accommodation. It also includes part-time students of all ages, who often work either full- or part-time while studying, and adults with careers and families. Although there may be vast differences in the backgrounds and educational goals of commuter students, they all share some core needs and concerns (Jacoby, 1989:5,6). They all have less time to spend on campus, have to make arrangements for, and spend actual time, travelling to and from campus, have multiple life roles, have to include their support systems into their educational responsibilities and have to develop a sense of belonging on campus.

The classroom is often the only place where these students meet with faculty and peers (Tinto, 1997: 599) and, therefore, can be a crucial factor in the academic and social integration of this kind of student. A feeling of membership and belonging in the classroom can lead to membership of the wider social community. Practices and policies which suit residential students are not necessarily appropriate to accommodate commuter students. Creative ways should be found to incorporate these students and make them feel part of the total higher education experience.

In a research report dealing with commuter students, Jacoby (1989:52-60) compiled a comprehensive list of recommendations and strategies which institutions could follow to better accommodate this kind of student. A few of these recommendations regarding the organization of the curriculum and classroom activities were selected as practical examples to illustrate the issues which are often overlooked by institutions. Some of these issues were further explained by Tinto (1997:599-601). The recommendations are: to use active learning and create opportunities for interaction in the classroom; consider the life style of and practical implications for commuter students when planning assignments or group projects; keep in mind that it may be

dangerous for some students to travel after dark when scheduling tests and examinations; make sure that computer facilities are available at times when they can be used by off-campus students; run programmes which would identify students who are having problems and provide assistance to these students; schedule support programmes in such a way that they can be attended by commuter students.

Although commuter students are often older, the role of age is not always necessarily negative. The fact that students between the ages of 18 and 25 have to deal with identity formation problems which might be facilitated by maturity, implies that more mature students might have an advantage in this regard. They will probably not have to cope with the kind of problems which adolescents grapple with to the same extent as their younger fellow-students. Younger commuter students often have a greater need to socialise than older students. Those of them who, because of financial constraints, have to live with their parents often feel restricted by these arrangements and cannot participate in the social activities on campus. Some form of financial aid could benefit these students.

The importance of taking cognisance of alternative strategies to incorporate commuter students lies in the fact that efforts by the institution to increase the academic and social integration of this high risk group of students, would encourage persistence (see 2.5).

Since the development of students who continue and complete their studies is one of the goals of higher education (see 2.1) and quality is measured by the students' success and through-put rate, the relative nature of success will now be considered.

2.4 Different perceptions of success

Success is a construct defined by the society in which an individual functions, as well as by personal goals. Therefore, what each individual would value and consider as being successful is the result of an interplay between the values of society and the person's goal schema (D'Andrade, 1995:235,239). (For a further discussion of the importance of goals in student persistence and motivation see 2.5 and 4.5.2). The

function of goals is to direct activity, but there is a reciprocal relationship between a person's activities and goals, because the nature of a task influences the goals set for the task, while the goals affect the way in which the task is performed. The personal reward, whether intrinsic or extrinsic, accompanying the completion of a task also influences the time and effort a person would be prepared to devote to such a task. This has a direct effect on the level of performance which the individual would set as a goal for a specific task (Pace, 1998:30) and which would then define success for this person in the specific situation. This notion of the relationship between goals and performance is also supported by other researchers (Stark Shaw, & Lowther, 1989:49) who state that student performance is influenced by the interaction between student goals and the learning environment. Since the broad goals of individual students regarding education, as well as their specific goals for a particular learning task, differ, it follows that in the same environment being successful means different things to different people.

After several investigations at American institutions, during 1986 and 1987, into the cause of student failure and the circumstances which lead to success, the American Association for Higher Education (AAHE) identified seven key factors which determine the level of achievement in higher education. These are: student-staff contact, co-operation among students, active learning, prompt feedback, time-on task, high expectations, and respect for diverse talents and ways of learning (Gamson, 1991:5).

In higher education the institution's view of student success is defined by the duration of study, and the rate of completion of both under- and postgraduate students, level of grades and the number of students continuing to postgraduate studies. However, from a quality perspective within a developmental approach (see 2.2.1 and 2.2.2) academic achievement is only one of a range of student outcomes which signifies success. Since the purpose of higher education is to develop the whole person (Barnett, 1995:21; Department of Education, 1997:8), just focusing on quantitative indicators would be a narrow definition of success. Therefore, although quantitative indicators are investigated in this study, attention is also given to qualitative indicators of success, as well as to factors which might contribute to failure and to students' decision to

discontinue their studies and leave the institution. In many cases this decision brings an end to the person's participation in further post-secondary education and signifies a permanent move out of the system. The high cost of student drop-out makes student retention a topic for serious investigation. In the next section existing research on student persistence will be discussed.

2.5 Student persistence

One of the factors which are taken into consideration when the quality of a higher education institution is determined, is how many students complete their courses (see 2.2.2). Taken as an isolated measure, it would imply that the through-put rate of students for a specific course would be an indicator of the quality of that course. This, however, in a holistic approach to quality assessment, is not a valid conclusion, because completion rates can be misleading (Barnett, 1995:104). If, for example, the assessment procedures are inappropriate or unreliable, the pass rate might be inflated. This is just one of many factors which can contaminate results. What can be derived from these through-put rates is merely the status of the course regarding its effect on student persistence. But this is also not the only factor which determines the retention of students. Before the existing theories of student persistence are discussed, one needs to clarify what is meant by some terms like attrition and drop-out, which are often used in relation to persistence.

2.5.1 Attrition, stop-out and drop-out

Students depart from institutions for various reasons and with different intentions. They sometimes discontinue their studies, but return to the institution at a later stage, either to repeat the same course or to follow another course. This is referred to by Bers & Smith (1991:554) as *stop-out* behaviour. Although these cases of temporary departure have negative financial implications for the institution, they are not as serious as those cases who leave the system permanently and thus are a total loss to the institution. The latter are referred to as *drop-out* students, or simply *drop-outs*. There can be several reasons why students decide to leave, namely, personal circumstances like illness, a family crisis or financial problems, or because of academic considerations. If the reason for the decision to discontinue is of an academic nature, it

usually is either because of a wrong subject choice or because the student did not achieve adequate results to reach the minimum pass rate.

Another reason why students leave the institution is because of *attrition*. By attrition is meant a gradual deterioration of academic performance, for whatever reason, until the student eventually leaves the campus without completing the full course and thus without obtaining a qualification. This distinction between attrition and drop-out is sometimes ignored in the literature, in which case the two terms are used interchangeably. Although institutions are concerned about all forms of non-persistence, it is the student who permanently drops out of the system, who is of greater concern, because in many cases the conditions which cause drop-out could probably have been altered or averted. How this might be done becomes clearer when one considers the existing theories of student persistence.

2.5.2 Theories of student persistence

Two comprehensive theories of student persistence on which other researchers based their investigations, are Tinto's Student Integration Model and Bean's Model of Student Attrition (Cabrera, Castaneda, Nora & Hengstler, 1992:143).

Tinto's theory (1975:89-125, 1987), the *integration theory of persistence*, emphasises the student's experience and perception of the educational environment. He considers attrition as a function of the match between the individual's ability and motivation, and the academic and social characteristics of the educational institution. According to Tinto two kinds of commitment result from the correspondence between the individual's characteristics and that of the institution, namely a goal commitment to complete the course and a commitment to the institution. The extent to which students perceive their social and academic expectations to be met by what the institution offers, determines their commitment to the institution. It also affects their educational goals, which influence their decision whether or not to complete the course for which they are enrolled at that particular institution. The larger the commitment, the more likely it is that the student will persist. Students' integration into the educational environment is determined by their perception of how well they fit in and cope both socially and academically in the educational environment. What is not addressed in this

Student Integration Model is the influence of external factors in shaping perceptions, commitments and preferences. Later research by Tinto (1997:613-620) moves even further into the micro-level of the internal educational environment, when he stresses the importance of the student's integration into the learning community within the classroom as an influence on persistence.

Bean (1980:155-187, in Cabrera et al., 1992:143) based his *theory of student attrition* on process models of turnover in work organisations and emphasises the interaction between attitude and behaviour. Bean's theory assumes that beliefs shape attitude, while attitude in turn shapes behavioural intents, and that beliefs are influenced by the student's experience, both internal and external to the educational environment. Bean considers the student's behavioural intentions, that is the intention to stay or to leave, as predictors of attrition. The *Student Attrition Model* recognises the influence of external factors on both the decisions and attitudes of individuals, and accepts that personal, organisational and environmental factors shape these attitudes and intents. Further research by Bean and Vesper (1990 in Cabrera et al., 1992:145) yielded results which indicated that non-intellective factors (see 4.5) played a major role in drop-out decisions, and that family approval and finances which are external, environmental factors influenced persistence both directly and indirectly.

The most salient difference between these two models is the exclusion or inclusion of the external environment as an influence on the student's decision to persist. Equally significant are the similarities between these two models, namely the importance of the match between the student and the institution, and the emphasis of the two elements in student persistence, firstly, the inter-relatedness of factors and secondly, the build-up over a longer period. In other words, persistence-decisions are influenced by a series of interactions over time.

Cabrera et al. (1992:159, 160; 1993:134) combined these two theories for their research on student persistence and, by doing that, suggested a converged model which could be used by researchers. This model emphasized the direct influence and predictive value of student intent on persistence, and the value of external factors like encouragement from family and friends in strengthening the student's intent to persist.

2.5.3 Factors influencing student persistence

Several factors seem to play a role in student persistence. These can be categorized into three main groups, namely, factors relating to the student him/herself, that is, his/her personality, personal circumstances, social and academic background, as well as general academic orientation and aspirations; those factors relating to other people, both inside and external to the academic environment, namely peers, faculty, administrators or administration officers, family and friends; and those factors relating to the institution, for example the mission, climate, culture and practices, including the total academic experience which the specific institution affords the student. How successful the student is in making the transition from school into the higher education environment is influenced not only by each of these factors individually, but also by the interaction between various factors, with different combinations for each individual (Terenzini et al., 1994:61). Exactly this complex inter-relationship between the factors makes a definite separation between the three categories artificial. The attempt to structure the further discussion in such a way as to discuss each of the categories separately, therefore, does not accomplish an absolute division of factors within each category, but allows for some overlap.

2.5.3.1 Factors relating to the student

Students enter the university with a wide spectrum of background characteristics which influence their orientation to and experience of higher education. The social and academic backgrounds of students influence their choices regarding courses, friends, the frequency and intensity of participation in both academic and social activities and, consequently, affect the nature of their total higher education experience (Terenzini, Springer, Yaeger, Pascarella & Nora, 1996:3).

The transition from school to the higher education environment requires from first year students both academic and social adaptation. This is a highly complex process in which the influence and interaction of interpersonal, family, institutional and academic factors make the experience unique for each individual student. Although the adaptation process is different for each student, attending a university or college after high school completion is a natural sequence of events for many traditional students.

This is not true for first-generation students for whom the passage into higher education is not a part of their family tradition or expectations (Terenzini et al., 1994:63). For these students there is, apart from the normal anxiety and confusion which all students experience during the process of academic and social adaptation, also a cultural adaptation to cope with. This cultural change often leaves students with feelings of total isolation, because they find themselves torn between two contrasting value systems, without completely belonging to either of the environments which represent these systems.

Research on the differences between these two groups of students has focused mainly on three phases relating to the higher education environment, namely pre-entry conditions, transition processes and experiences while attending a higher education institution (Pascarella & Terenzini, 1991:380; Terenzini et al., 1996:2,3). The differences related to the pre-entry stage of first-generation students are, inter-alia, lower socio-economic status, a poorer educational background, weaker cognitive skills (in reading, mathematical and critical thinking), lower career expectations, less contact with teachers and peers during high school and less parental encouragement (Terenzini et al., 1996:16). All these factors indicate potential learning and persistence problems, and make these students a group which is academically at risk and which would need more support and encouragement from the institution than the traditional students.

The transition stage also poses differences between traditional and first generation students. Apart from the additional cultural adaptation which the latter group must cope with, they also seem to be more anxious about their ability to cope academically in predominantly white institutions than is the case when these students attend pre-dominantly *black* institutions (Pascarella & Terenzini, 1991:382, 409). Findings by various researchers (Terenzini et al., 1994:64; Nora & Cabrera, 1996:140; Tinto, 1997:617), indicate that traditional students are initially more concerned with making friends, that is with social adaptation, while first generation students tend to be more concerned with academic matters and are prepared to set aside social activities in order to have time to attend to their academic responsibilities.

Adaptation is an ongoing process which feeds into itself. The degree to which students become involved in the activities on campus is a result of each individual's perception of his/her position in the higher education environment. In other words, how well students think they cope both socially and academically will determine to what degree they will take part in the activities on campus. This perception of academic and/or social success influences the self-image of the student, and the better students feel about themselves, the higher the chances that they will persist (Tinto, 1997:601), and the more effort they will be prepared to put into academic and social activities (see 4.5.1.3).

The quality of a student's effort is the most important factor which determines the quality and extent of learning and development that takes place (Pace 1998:30). By effort is not only understood the energy that goes into studying or attending classes, but also the time and energy devoted to activities which would make the student a part of the total system, both academically and socially. The student's effort affects learning and development in an upward or downward spiral. For example, the more students learn, the more interested they become and the greater their involvement in the academic activities inside and outside the classroom. More involvement leads to higher achievement (Pascarella & Terenzini, 1991:101) which brings about a better academic self-image. The better the student's self-image, the better the chances are that he/she will persist. The opposite downward spiral would lead to less involvement and a poorer self-image which then finally ends in drop-out.

The quality of effort which a student expends on academic activities is related to several factors, like a student's personality and the way in which he/she attributes effort as a cause of failure or success (see 4.5.2), as well as to the student's perception of course and faculty expectations. The effect of faculty expectations on effort and achievement has been researched from various angles. For example, Tait & Entwistle (1996:98) found that evaluation practices determine the student's study approach and thus the nature and level of student effort that goes into test preparation. Pascarella & Terenzini (1991:393-395) quote a range of findings which illustrate the connection between faculty expectations and educational attainment, but emphasise the reciprocal influence of high student aspirations and faculty contact and warn against a simplistic

interpretation which equates student effort with any single variable like interaction with academic staff.

In a study on the relationship between student effort and achievement, Erekson (1992:436) used three of the fourteen quality-of-effort scales designed by Pace (1979) which relate directly to academic achievement. These were usage of library resources, course learning and contact with academic staff. The results indicated that contact with academic staff was the only one of the three effort variables that had a significant effect on the students' grade point average (GPA).

These findings have both positive and negative implications. On the positive side it affirms the theory that contact with academic staff, as an element of academic integration, improves achievement and thus increases the chances of persistence (see 2.5.1). The negative implication of the results is that, if students perform better by putting more effort into contact with academic staff than into course learning or library usage, the teaching and evaluation strategies used by the lecturer might be such that they do not demand any self-study or independence from the student. Such practices defeat the purpose of higher education to develop independent, life-long learners thereby contributing to the establishment of a learning society.

As can be seen from this discussion and as stated earlier (see 2.4), the expectations and goals of students influence academic success, because they determine the individual's level and direction of motivation. However, these initial expectations and goals do not remain unchanged, but are shaped by the student's experiences in the higher education environment. Furthermore, the same experience does not affect all students in the same way. How different individuals interpret what happens to them is, inter alia, influenced by their relationships to other people, internal as well as external to the institution.

2.5.3.2 Factors relating to other people

Friends can have both a positive and negative influence on students. High school friends who continued to a college or university after school can serve as a bridging mechanism for students during the initial social adaptation period. On the other hand,

those who stayed at home or started to work after school can hinder especially first generation students, either by pushing them out of the community circle, thus adding to the feeling of isolation that they might already experience at the institution where they are studying, or by urging them to spend too much time on social activities in their home environment (Terenzini et al., 1994:65).

Former students who dropped out of the system can also have a negative effect on friends who are still studying. The student's impression of negative experiences at the institution are not rectified, but rather reinforced by discussing them with those friends who discontinued their studies (Tidwell, 1989:163). These drop-outs often compensate for their feelings of failure and inferiority by remarks which discourage and belittle students who are persisting.

In a study to test the effectiveness of Baker & Syrik's *Student Adaptation to College Questionnaire* (SACQ) predicting persistence, Krotseng (1992:106,107) found that other factors are more important than grade point average (GPA) in the persistence decision. The SACQ combines items which assess participation and involvement with fellow students in a scale which indicates attachment to the institution. Krotseng found high scores in this latter category a better predictor of persistence than GPA.

Although interaction with fellow-students and friends at the institution usually facilitates the student's adaptation process, contact with peers with high aspirations can also impact negatively on some students (Pascarelli & Terenzini, 1991:376). In prestigious institutions with a competitive atmosphere, students may lower their aspirations if their academic standing does not compare favourably to the overall achievement of the peer group. In such a case these students would probably discontinue their studies if they are not supported by faculty or by people in their home environment.

Encouragement from family, friends and significant others has a positive influence on persistence for both minority and non-minority students (Terenzini et al., 1994:65; Eimers & Pike, 1997:93). Although the families of non-traditional students value education because of its potential economic advantages, for very poor families the

need to survive is still stronger than the benefits of education and therefore the drop-out rate for these students is still high (Tidwell, 1989:162, 159).

Academic staff play a very important role in student persistence. Not only do they shape the classroom experiences (see 2.5.3.3), but students' perception of the approachability of staff, and consequent contact with academic staff, partly shapes their perception of their standing in the academic life on campus. Students' involvement in learning activities, their views of quality of teaching, advising and course work, and their contact with academic staff are significant predictors of persistence (Tinto, 1997:618; McLaughlin, Brozovsky & McLaughlin, 1998:9). However, it is the quality of interaction with staff, as well as the extent to which students believe lecturers are concerned about their academic development, and not the frequency of contact, that influences the academic performance of both traditional and non-traditional students (Nettles, Thoeny & Gosman, 1986 in Nora & Cabrera, 1996:127).

The role of other people in the life of the student is to validate the individual's self-perception regarding his/her capability and acceptability in both the academic and social realms of higher education. These two domains do not function separately, but can be considered as two concentric circles with the student as centre and the academic sphere embedded in the social sphere. Positive or negative experiences in one are conducive or detrimental to experiences in the other. Because both the social and the academic character of an institution is determined by its culture and climate (see 3.3), these two features would influence the experiences of students attending the institution, thus indirectly shaping their persistence decisions.

2.5.3.3 Factors relating to the institution

With a heterogeneous student population one would expect that the most obvious feature of the institutional climate that could cause attrition, would be discrimination. The research literature on especially racial discrimination and prejudice indicates, however, that other factors are more significant in causing attrition than incidents of racial discrimination. Although most non-traditional students experience racism in some form or another, for example in the attitudes of, and/or remarks by, lecturers,

administrators and/or fellow-students either inside or outside classrooms, the research findings indicate that non-white students are more capable of surviving these incidents of discrimination than their white peers. Perceptions of prejudice and discrimination do influence the academic and social integration of non-traditional students negatively and have a detrimental effect on their cognitive and affective development, but not on student persistence (Nora & Cabrera, 1996:140,141; Eimers & Pike, 1997:93). These researchers found that academic performance, encouragement from parents and friends, as well as positive academic and social experiences, are much more influential on persistence decisions than perceptions of discrimination and prejudice. Furthermore, minority students who are successful do not allow feelings of discrimination and prejudice to interfere with their academic and career goals.

One of the reasons for temporary or permanent discontinuation of studies, which is often cited by students, is the student's inability to meet the high financial demands of attending an institution of higher education. Although the literature on persistence research includes some studies which incorporate financial assistance as a variable that affects persistence (St. John, Andrieu, Oescher & Starkey, 1994), very few researchers investigated the relation between monetary factors and other factors which influence student persistence. In their converged model of persistence, Cabrera and associates (see 2.5.1) looked at the effect of the student's attitude towards finances on other factors related to persistence. They found that it had a direct effect on GPA and on academic integration, and an indirect influence on persistence (Cabrera et al., 1993:134).

Financial aid equalises the chances of students from low-income families and those of more affluent young people regarding access to higher education (Cabrera, Nora & Castaneda, 1992:574). One could expect that unmet financial needs would distract students' attention from their academic responsibilities, thus affecting GPA and consequently indirectly affecting academic integration. A lack of funds to pay for social activities would also minimise the student's participation in these activities, thus directly impacting on the extent of socialisation and indirectly on social integration. One could also hypothesise that receiving financial aid from the institution would promote a positive feeling towards the institution and thus impact on the student's

commitment to the institution. As stated before, these speculations are confirmed by Cabrera, et al. (1992:589) who found that finances affect students' academic integration, their socialisation processes and the decision to persist at the institution. The student's commitment to an institution that provides financial aid might be due to two different reasons. The fact that students are less anxious about sufficient funds to pay for their education might reduce the consideration of other alternatives like leaving the institution to work full-time, or changing to a less expensive institution. On the other hand, students might view the institution as a potential source of future funding and thus decide to persist at the particular institution.

Another positive result of students' satisfaction with the financial aid which they receive, either from family or from any kind of institution, is according to Cabrera et al. (1992:590) that it seems to enable the student to devote more time and energy to academic activities related to the classroom, thus promoting academic and intellectual development. The student's participation in classroom activities has several other positive implications.

The underlying forces that link classroom experience to persistence are the formation of supportive peer groups, the bridging of the gap between the social and academic interests of students by shared learning experiences, and the opportunity to take part in the construction of knowledge (Tinto, 1997:609-612). Meeting people and making friends is an important part of students' activities during their first year of study. Being part of a classroom learning community facilitates this process. The network of supportive peers helps students to make the transition from school to higher education. An additional benefit of classroom communities is the exposure to a diversity of views and the experience of people with whom the student has contact, who would not have been part of his/her usual social circle or activities.

The interaction with peers in the classroom situation and the friendships which often develop from this contact, lessen the problem of isolation which especially minority and commuter students experience. The fact that they spend their time outside the classroom with peers who are involved in the same or similar learning activities makes the choice between their social and academic life easier. The two spheres are more

integrated and the interests and time scheduling of friends are more similar than when a student's friends are mainly outside the learning environment.

Five factors seem to be significant predictors of persistence. They are, in no specific order, participation, college/university grade point average (GPA), hours study per week, students' perception of academic staff, and involvement with other students (Tinto, 1997:608). As discussed earlier (see 2.5.3.2) several other researchers confirm the importance of each of these factors. Regarding time studying, Pace (1998:31) states that an average student needs at least 35 to 40 hours of academic activity per week in order to be successful, but found that many students spend up to a total of 50 hours or more per week attending classes and studying. The importance of the study aspect of student effort is also emphasized by the fact that the AAHE identified time-on-task as one of the seven key factors for success in higher education (see 2.4). The perception of sufficient time-on-task, as well as some other factors influencing student success especially in the South African context will be discussed in the following section, which deals with some students' under-preparedness for higher education.

2.5.4 Under-preparedness of disadvantaged students

The Western culture embedded in South African universities and the differences in the educational backgrounds of students who gain access to higher education cause many non-traditional students to be at a disadvantage in many aspects within the learning environment (De Boer & Van Rensburg, 1997:159). This disadvantage goes beyond purely inadequate knowledge of some fundamental content and principles required for post-secondary education. It involves both academic and sociocultural factors. Because of the complex nature of the problem of under-preparedness, political measures to rectify inequalities at the primary and secondary levels of the education sector, are on their own not going to offer a satisfactory solution (Van Heerden, 1997:77). In the further discussion the academic and sociocultural aspects which contribute to some students' under-preparedness for higher education and thus perpetuate their disadvantage in comparison with more privileged peers, will be pointed out.

All students have to adapt socially and academically to various aspects of the higher education environment which are unfamiliar to them (Craig, 1996:49-50; Troskie, 1996:66-70). Craig (1996:50) distinguishes between students with *normal adaptive difficulties* and *under-prepared* students who are *"unequipped or ill-equipped with those skills and knowledge which would make adaptation relatively easy and possible"* without some kind of special intervention. She defines the term *under-prepared* further by arguing that if the gap between a student's innate mental capacity and the student's ability to use this mental capacity is too big for normal adaptation to new and strange tasks and situations, such a student will be considered to be under-prepared.

Academic under-preparedness implies that students' school education did not equip them with adequate knowledge and skills. This knowledge and skills refer to more than just basic content knowledge, appropriate study habits and effective note-taking, reading, writing and listening skills (De Boer, 1997:161; Boughey, 1998:171). It implies an understanding of processes underlying academic activities (Miller, 1997:15), students' use of cognitive and metacognitive skills (see 4.3.3.3-4.3.3.5), their level of information literacy, and whether the student has an inquisitive, critical mind and a positive attitude towards learning (Dison & Rule, 1996:86-87; Van Heerden, 1997:81). What all this entails in terms of the higher education curriculum will be discussed in more detail later on (see 5.4). Students from any population group may be academically under-prepared for higher education, but only students whose culture differs from the institution's dominant culture, carry the additional burden of inadequate sociocultural preparation (Nolte, Heyns & Venter, 1997:168).

The sociocultural environment in which students have grown up influences their approach to and performance in the higher education environment (Van Heerden, 1997:79). In a study of *black* UNISA students this author identified several factors which affected students' progress. How some of these factors contributed to students' under-preparedness for the rigour of higher education will be explained briefly.

The poor economic circumstances in which many of the subjects in Van Heerden's study grew up deprived them from contact with cultural objects in the home or

neighbourhood. The adults with whom they interacted were also often semi-literate or illiterate. This implies that the students would have limited experience and knowledge of concepts and practices which are regularly referred to in academic texts and which lecturers assume all students know and understand. These student would lack tacit knowledge (see 4.4.2.6) about the contents and underlying meaning of the learning material. In order to get other perspectives than their own they would either have to spend time discussing the work with their fellow students from different cultural backgrounds or read additional material. Depending on their knowledge and experience of the language used in the sources that they read, they might still not be aware of the unexpressed underlying meaning of the written text.

The low literacy level of the adults in the students' home environments implied that the students interviewed in the UNISA study were mostly first-generation students. Apart from the fact that their family and friends at home did not realise that they should not impinge on students' study time, the students' own perception of the requirements of successful post-secondary study seemed to have been wrong. Van Heerden (1997:85) reports frequent instances of student misconception about the workload, sacrifices and commitment regarding study time and effort. This resulted in either unrealistic planning or the complete absence of a work schedule, both causing failure.

Another factor that was found to affect students' performance was the *African* concept of time and the fact that these students seemed to have grown up with no clear sense of time limits. This resulted not only in late submittance of assignments, but also in an apparent complete absence of any time management efforts (Van Heerden, 1997:84). Although ineffective time management is not a problem that belongs exclusively to non-traditional students, very little exposure to activities that must be completed before a specific deadline would probably make the adaptation to a life style that demands at least some degree of time management more difficult.

The awareness of the "inferiority" of their own social and academic background can affect the self-image of *black* students and cause frustrations which reflect in the attitudes and behaviours which they bring with them to the university (Nkomo, 1984:111). What happens to the student in the higher education environment can

contribute either positively or negatively to these attitudes and behaviours and consequently will affect student persistence (Eimers & Pike, 1997:92). For this reason it is important to create circumstances at higher education institutions that would facilitate the academic integration of all students. One of the most important features presented in the recommendations made by Terenzini et al. (1994:69-72) in this regard, is a general awareness of the diverse backgrounds and needs of the student population, and a willingness of all concerned to accept, accommodate and respect these differences.

2.6 Summary

In this chapter a developmental approach has been put forward as the most viable way to assess quality and excellence in a student-centred higher education environment. The relative nature of conceptions of success has been pointed out and various possible causes of attrition have been discussed. The position that the student's effort combined with the effect of the total higher education experience ultimately determines the level of success, has been supported. The widely used theories of persistence, namely Tinto's *Model of Student Integration* and Bean's *Model of Student Attrition* have been discussed. Research findings based on these two models of persistence have indicated that various factors related to the individual, other people and the institution, determine persistence and success in the higher education environment.

All these findings indicate that some factors do influence student retention more than others. It is the institution's responsibility to identify the strength of each of these various possible factors which can negatively influence its own student retention, and try to rectify them with appropriate student support. It would be wise to focus on factors that can be manipulated to prevent attrition, rather than to lament past circumstances which still cause student drop-out. However, to better understand the differences in the academic background of specifically South African students, the following discussion will explain the role of the educational system of this country in creating and perpetuating some of these differences.

CHAPTER 3

EDUCATIONAL BACKGROUND AND A CULTURE OF LEARNING IN THE SOUTH AFRICAN CONTEXT

One of the main themes dealt with in the previous chapter was student persistence. Educational background was identified as a factor in how well students cope academically during their first year in the higher education environment and as a significant factor in the persistence-attrition decision. To achieve excellence within a developmental approach, it was indicated that the role of the educator is not only to help students to obtain a qualification within the minimum specified study period, thus working towards the institution's increased pass rate, but to encourage students to become lifelong learners by fostering a culture of learning. In the following section a closer look is taken at the kind of education system which produced the non-traditional students who are entering our universities. The kind of learning culture that is nurtured by such an education system is also discussed. This is done in an attempt to explain why the academic preparation of students who enter our universities is not always adequate to enable them to succeed in the higher education environment.

3.1 Introduction

Although most students who are presently enrolled for undergraduate studies at a South African university were at school during the period 1983 - 1997, one should go further back in history to fully understand the developments and changes related to the South African education system. Many present day issues, such as problems resulting from the language medium, inequality in education provision and standards, and the constitution and rights of educational governing bodies have been topics of dispute in education since the beginning of the 20th century.

The controlling authorities in education and their application of the available funds determine what goes on in schools, because they decide on the educational aims and implementation procedures, as well as the means, both financial and practical, by which these aims should be attained. The quality of education at school level is, however, also influenced by the availability of facilities, the educational background,

knowledge and abilities of the teachers, the curriculum, the instructional methods and evaluation procedures which are employed, as well as the suitability of the medium of instruction. Furthermore, the integrated nature of the various elements in a school system implies that if any of those elements which form part of the system is of an inferior quality, the standard of the whole system will be lowered. Since the decisions regarding all of these factors lie with whoever is in control of the system, the power and importance of the controlling bodies in determining the quality of schooling should not be underestimated. If one also takes into consideration the fact that without regular school attendance even the best school system cannot provide pupils with a proper education, one becomes aware of the complex relations and interdependence of factors which affect the provision of quality education.

3.2 The South African education system

Until 1994 there was no uniform education policy for the *Black*, *Coloured*, Indian and White population groups of South Africa and there were vast differences in the quality of education provided to the children belonging to each of these groups. The discussion that follows is not intended to be a complete historic overview of the development of education in South Africa, but rather seeks to highlight events which influenced the direction and nature of the provision of education, especially for *Africans* and "Coloureds". Since the political situation and the ruling party of a country determine its educational policy, the presentation of the events which influenced educational developments in South Africa is divided into three broad periods. These are, firstly, the period under British rule and the gaining of independence by the Boer Republics; secondly, the era of National Party governance, which is sub-divided into the educational situation before and during the tri-cameral political system, and lastly, the period preceding and since the ANC came into power. The situation regarding school governance, facilities, the curriculum, quality of teachers, medium of instruction and school attendance during each of these periods, will be discussed.

3.2.1 The late nineteenth and early twentieth century

During the nineteenth century compulsory education did not exist in South Africa and

whites and *non-whites* were not separated officially. The official policy in the Cape was that all schools were open to all races. Schools were established by the church, private enterprise and by the state in areas where many families were clustered together and where there was a need for education. Cultural differences and differences in standard of living caused "natural" separation in certain areas, but in the Cape and in Natal mixed schools were not uncommon. In those areas where a mixed community lived, the children went to the same school. However, most *non-whites* did not realise the value of education and consequently did not send their children to school (Education Bureau, 1987:1-2). In the former Transvaal and the Free State (now known as Gauteng and Free State Province) education for *black* people was provided mainly by missionaries (Geber & Newman, 1980:58; Meyer, 1991:64). Although mostly *Africans* attended the mission schools, there was no official policy of separation in the educational systems till towards the end of the century.

In 1892 the Superintendent-General of the Cape, Sir Thomas Muir, introduced a new policy of separate schools for whites and *non-whites* and in 1905 he was instrumental in the passing of the School Board Law which made school attendance compulsory, dependent on the availability of school accommodation. Instead of phasing in compulsory education by age group, Muir decided that only white children should be compelled to attend if a school existed in their area. The privileged treatment of white children was further advanced by the fact that the people serving on the school boards were white males and consequently most of the state schools that were established were for white pupils (Education Bureau, 1987:3-4). Muir planted the seeds of a divided educational system which would in later years lead to vast differences in the general educational level of the various population groups in South Africa.

Although they were privileged by the education system, the white population did not consist of one homogeneous group who lived together in harmony. After the Anglo Boer War (1902) language issues between Afrikaans- and English-speaking people were more important than other educational matters, especially in the Free State and Transvaal where independent Christian National Education Schools had been set up by Afrikaners. When the British government granted independence to Transvaal (1906) and the Free State (1907), the Smuts Education Act encouraged the independent

Afrikaans schools to merge with government schools. This moderate approach to language was not acceptable in the Free State, and Hertzog's 1908 Education Act caused a feeling of bitterness amongst the English. A settlement of the language issue between the Afrikaners and the English was only reached several years after the Union of South Africa was formed in 1910 (Rose & Tunmer, 1975:10). The two Boer Republics insisted that mother tongue education for white children should be instituted up to standard 4 (Geber & Newman, 1980:59; Behr, 1984:22). Language issues remained a complex problem and an important point of strife throughout the history of South African education.

Without entering into a lengthy, philosophical discussion about language as a mediating factor in thought and behaviour (see 4.3.2), it is perhaps necessary at this stage to draw attention to the importance of language in the historical development of the Afrikaner. It should also be remembered that Afrikaans, which is now regarded by many people in South Africa as the language of the oppressor, once was an "oppressed language". That language also can become a tool in manipulation and a smokescreen for exclusion, as Afrikaans has been widely suspected and accused of, is not to be justified. But perhaps it should be viewed as an abused tool in the manifestation of the Afrikaners' determination not to sacrifice that which is such an integral part of their identity as a cultural group in South Africa - their language, Afrikaans. The emotional power of language is illustrated by the following passage:

> *Language... is not merely a means of communication, it is a repository of values, standards, beliefs and past achievements - a social instrument of consequence (Rose & Tunmer, 1975:150).*

As will be seen in the further discussion of the development of the South African education system, language issues and problems caused by, or related to, Afrikaans reappear continually.

After the Union of South Africa was formed in 1910, the four provincial authorities, which were politically independent, remained in control of all primary and secondary schools (Rose & Tunmer, 1975:12). This meant that a divided education system with

costly duplication of services and administration continued.

In 1917 the Jagger Commission found that there was no control over the expenditure of the provincial authorities, and that the provinces differed largely in terms of, inter alia, curricula, examination requirements, as well as the supply, training and salaries of teachers (Union of South Africa, 1917:49-50 in Rose & Tunmer, 1975:14-17). To overcome these problems the Commission recommended a central Department of Education that could exercise general control over all education affairs. This recommendation was rejected. In the same year, however, the financial and administrative responsibility for industrial education was taken over by the Union Department of Education, and in 1921 the syllabi for commercial and technical diplomas were set by central government, although the students still attended provincial schools. Because of the financial implications for provincial authorities, more sectors of education became the responsibility of central government in subsequent years. The determination of the provinces to hold on to their educational powers caused ongoing conflict with central government (Union of South Africa, 1917:49-50 in Rose & Tunmer, 1975:14-17). The division of educational management and non-uniformity of curricula and standards are also recurrent themes in the history of South African education.

The provinces, especially the Transvaal and the Cape, realised that their geographical areas were becoming too large for proper control by the school boards. This problem had also been pointed out in the Jagger report and was addressed by the appointment of another commission in the Transvaal in 1917 under chairmanship of H.L. Malherbe with the task of investigating the administration of education. The main report, issued in 1920, stated that the Commission was against centralised control of education and recommended (as the Jagger Report did) more local involvement in education. Apart from problems related to governing bodies, two other contentious issues were reflected in the report, namely language problems and discrimination. Malherbe reported complaints that school boards were elected along political lines and mentioned several requests for entirely separated Dutch and English education systems (Province of Transvaal, 1920:66 in Rose & Tunmer. 1975:18,19). Malherbe rejected these requests.

In 1922 the higher education sector was defined by legislation (Financial Relations Fourth Extension Act, No. 5 of 1922). The inclusion of the South African Native College as well as other technical institutions which, inter alia, trained teachers, implied that students with less than a matriculation certificate had access to higher education. Not only did the central government take over the technical colleges, a section of education which actually belonged to the secondary school sector and thus should be under provincial control, but also some of the teacher training institutions which, due to the shortage of teachers, had allowed pupils with lower school standards than matric to be trained as teachers (Rose & Tunmer, 1975:21; Education Bureau, 1987:7). The fact that teachers with inferior qualifications were allowed to enter the system would have far-reaching consequences regarding the quality of education in *African* and *Coloured* schools.

The conflict between the provincial authorities and central government was investigated again in 1928. The Van der Horst report (Union of South Africa, 1928:11-13 in Rose &Tunmer, 1975:25-27) added a new dimension to the matter. Until then, financial matters had been considered to be the main reason for the conflict. This report stressed the conviction that the real problem was not money, but the failure to develop a general educational theory or a philosophy which could form the basis for all educational administration. This lack of a generally agreed upon underlying educational philosophy, and non-uniformity in the interpretation of the principles stemming from such a philosophy, would continue to be one of the fundamental problems of the South African education system.

The National Party came into power in 1948. This was a watershed year in the history of South Africa and marked the beginning of active efforts, supported by legislation, to establish segregation and separate development, also in education. Until the last decade of the twentieth century the education systems for *Black*, White, Indian and *Coloured* people would each develop along its own lines. For greater clarity the further discussion of *Coloured* and *Black* education is done separately.

3.2.2 *Coloured* education between 1948 and 1984

After the election of 1948 the political situation of the *Coloured* community changed

for the worse. The Group Areas Act of 1949 prohibited *non-whites* from living in certain residential areas and the population register of 1950 introduced race classification. In 1951 the Separate Representation of Voters Act placed *Coloured* male voters on a separate voters' role with white representation in Parliament. This Act was declared invalid by the Appeals Court, but it was reinstated in 1956 (Behr, 1988:14). These political restrictions caused bitterness among the *Coloured* people and turned them against the Afrikaners. A consequence of this, which affected education, was that parents started to raise their children in English, often without being able to speak the language properly themselves.

Education for *Coloureds* took an upward turn in the early 1960s. In 1963 the name *Coloureds* was made official. A separate state department, the Department of Coloured Affairs was established, with an education section headed by a Director of Education. After this department had taken over the responsibility for all sectors of *Coloured* education from the provinces in 1964, there was an improvement in the standard and provision of education for this population group. This was also the first year in which school attendance was made compulsory for *Coloureds* in Natal and in those areas in the Cape where there were enough teachers and adequate school accommodation. This was however not strictly enforced at the time (Education Bureau, 1987:5).

In 1969 the Coloured Representative Council (CRC) was established and it took over the responsibility for *Coloured* education until 1980. Significant advances were made during this period. In 1974 school attendance was made compulsory for all seven-year-olds. Compulsory education was phased in until 1980, at which stage school attendance was compulsory for all *Coloureds* between the ages of seven and sixteen years who had not yet passed standard 8 (grade 10) (Education Bureau, 1987:22). To accommodate the pupils double shifts of schooling, with morning and afternoon sessions on every school day, were instituted in the available school buildings. Classrooms were still overcrowded, but a comprehensive building plan, initiated by the CRC, promised to bring some relief. In 1980 there were still two sessions per day, but fewer pupils had to attend afternoon sessions in spite of the increase in the *Coloured* school population from 516 760 in 1970 to 753 992 in 1980 (Education Bureau,

1987:6).

The provision of adequately trained teachers was still a problem, especially for secondary education. The problem, as described by the Education Bureau (1987:65,66), was that only a very small percentage (0.75% in 1980) of *Coloureds* reached and passed standard 10 and not all the pass marks were good enough to gain access to a university. The situation was further aggravated by the fact that students who managed to get access could often not cope either with the high standards or with the financial burden of an expensive university education and consequently there was quite a high drop-out rate. Furthermore, many of those students who did qualify were lured away to other occupations. The failure rate at the University College of the Western Cape - which later became the University of the Western Cape (UWC) - during the first five years after the establishment of the institution in 1960, illustrates the extent of the problem. At the end of 1960, 48 (36.3%) of the 164 students enrolled at the UWC failed. In 1961 the student population increased by approximately two-thirds, but so did the failure rate. Of the 288 enrolled students, 149 (59.6%) failed. The figures fluctuated over the years, but the average failure rate at the UWC during the period 1960 to 1964 was 38.5% (Kirstein, 1969:62).

In spite of these problems the CRC attempted to provide better qualified teachers. The level of teacher training was upgraded by revising college curricula and increasing training facilities and admission requirements. Since 1980 no student has been able to enter a teachers' training college without a matric certificate. Until then students had been allowed to follow a teachers' training course if they had a standard 8 (grade 10) certificate. This period of relative progress for *Coloured* education culminated in 1979 with the appointment of the first *Coloured* Director of Education who was appointed to manage the education affairs of this population group.

The CRC was dissolved in 1980 and *Coloured* education, together with Indian education, became the responsibility of a cabinet minister. The department was renamed the Department of Internal Affairs (Education Bureau, 1987:7). Discrimination in the remuneration of teachers on a racial basis diminished. Bursaries, travel grants and facilities in schools improved and an extensive building plan

diminished the problem of overcrowded classrooms and the necessity of afternoon shifts. During the early 1980's there was a decrease in *Coloured* primary school pupils, while the secondary school pupils increased by 26% from 140 150 in 1980 to 177 274 in 1984 (Central Statistical Service, 1995:5.23). There was also a 18,5% increase in the number of teachers from 25 720 in 1980 to 30 478 in 1984 (Education Bureau, 1987:7).

The *White Paper on the Provision of Education in the Republic of South Africa,* was published in 1983. The most important principle mentioned was equal education and equal standards for all, irrespective of race. This sounded very promising, but did not turn out to be so, because equality was to be achieved within a segregated framework. The new education system, functioning within a tri-cameral constitutional dispensation, was incorporated in the new *Constitution of the Republic of South Africa (*Act 76 of 1984). A parliament with three houses, the House of Assembly, House of Representatives, and the House of Delegates, for matters related to the White, *Coloured,* and Indian population groups respectively, was established in 1984. Each House had its own Department of Education and Culture. Education for *black* people was divided between the six Departments of Education of the self-governing territories, and the Department of Education and Training, which fell under General Affairs in Parliament. The education of Whites, *Coloureds* and Indians was considered as an "own affair" which was supposed to function within the specific group's own culture and values. Each department had its own Minister of Education, except the Department of Education and Training that reported to a cabinet minister, the Minister of Co-operation, Development and Training, and to the Minister of National Education (Bunting, 1994:5,6). This complex system perpetuated the lack of unity within South African education and made the effective control of educational institutions almost impossible. The education structure was now also officially based on racial and language divisions. This was, however, not a completely new government strategy as becomes clear when one traces the history of *black* education in South Africa.

3.2.3 *Black* education before 1984

The educational opportunities and circumstances of the *black* population group were

even less favourable than those of the *Coloured* group. Some of the most salient issues within the education system of South Africa, like disparity in the financing of white and *non-white* education, differences in teacher:student ratios, unqualified teachers, insufficient school facilities to accommodate *non-white* children, white governance of *non-white* education, non-compulsory schooling for *Africans* and low pass rates were reported regularly during the first half of the century (Meyer, 1991:62-63).

As stated before (see 3.2.1) the missionaries took charge of education for the *black* population during the nineteenth century. Even during the first decades of the twentieth century *African* education still consisted mainly of private initiatives subsidised by the state. Because of the limited work opportunities and the fear of the white people that the educated *black* people would replace them in the job-market, the education of *non-whites* in the early 1900s was mainly restricted to industrial training (Rose & Tunmer, 1975:201,202).

In 1903, under British rule, the first efforts to co-ordinate, expand and control the educational activities of the missionaries were made in the Transvaal. This "Scheme for Native Education" stated that mission schools were to use English as a language medium and that they would be inspected annually. The first post of an Inspector of Native Education was created in 1903. At that stage only about 10% of *black* children were attending the mission schools, partly because of the scepticism of the tribal chiefs who feared that education would undermine the tribal mores and partly because education was completely voluntary (Rose & Tunmer, 1975: 219).

Under the Transvaal Education Act of 1907 the "Scheme for Native Education" was elaborated (Union of South Africa, 1936:26 in Rose & Tunmer, 1975:224). The Act stated that training for "natives" should cover four areas, namely religious and moral training - including habits like cleanliness, obedience, industry, honesty and independence; physical training - including personal hygiene, as well as prevention and cure of diseases; social training - including civic duties and acquaintance with laws; and lastly, industrial training.

After 1910 the education of *Africans* was under provincial control. The Transvaal imposed a special tax on *Africans* in 1921 to finance the increased educational provision for the *black* population group, but central government prohibited this special tax by legislation a year later (Financial Relations Fourth Extension Act 5 of 1922). Uniform taxation for *Africans* in all the provinces was instituted and a fixed amount from general tax, which could be spent on "Native Education", was granted. This amount of £340 000 stayed the same till 1945 (Meyer, 1991:64) and was by no means adequate for the rapidly increasing educational needs of *Africans*.

By 1932 the poverty among the *African* population had grown to such an extent that, according to the report of the Native Economic Commission, this population group faced the threat of mass starvation should their already heavy tax burden be increased. These findings ruled out the possibility of funding the expansion of *African* education with *African* taxpayers' money and the question arose whether the Union Government should take over both the administration and the financing of *African* Education.

From the report by the Interdepartmental Committee on Native Education, under chairmanship of W.T. Welsh (Union of SA, 1936:86-90 in Rose & Tunmer, 1975:228-239) which investigated the feasibility of this proposition, it became clear that there was no uniform opinion about what the aim of *African* education should be. Even then the debate was whether the *African* population should be Europeanised so that they could take their place in Western civilisation, or whether they should be "educated" to develop "along their own lines". The Commission faced a further problem: even if the *African* were to be educated exactly like the white child, the social order for which the two children were educated was not the same. The white child would grow up to be a member of a dominant group with economic and social opportunities, while the *African* child would be part of a subordinate society with limited and unequal opportunities. Thus the fundamental question which the commission faced was whether the aims of *African* education should follow or lead the social order.

Another key question investigated by the Welsh Commission (1936), which was the topic of much debate at the time, was the educability of the *African*. At that stage the average school life of *black* children was less than three years and in any standard they

were two to three years older than their white peers. Achievement tests in Arithmetic and English, which had been standardised for white pupils, showed that on average the scores of *black* pupils in standard 6 were two standards below that of white standard 6 pupils. What is also interesting is that a comparison of the scores of *black* pupils in the four provinces could be rank ordered in the same order as that for the percentage of qualified teachers in each province (SAIRR, 1936:15-19 in Hartshorne, 1992:28). The Commission warned against hasty conclusions about the lack of innate mental ability based on the results of intelligence tests. Since these tests were based largely on scholastic skills, they could not be relied on to yield valid results while the quality of the *Africans*' education was in such a poor condition and lagged so far behind that of the white population. Some of these undesirable conditions, as described in the report, were overcrowded classrooms, unqualified teachers - most of them under the level of grade 8 - lack of books and other didactic equipment, and the malnutrition of pupils.

The Welsh Commission finally recommended that the administration and financing of *African* education should be taken over by the Central Union Government, and that it should be managed, not by Native Affairs, but by the Union Education Department. There was strong opposition to these recommendations and in the end only the financing of Native Education improved. Funding would no longer be directly tied to native taxation as it had been for the previous twenty years. However, South Africa's preoccupation with the Second World War distracted attention from the problem of *African* education until 1945. Only then were the changes to the financing of *African* education implemented.

A very significant report was published by the Institute for Christian National Education (ICNO) in 1948, the same year that the National Party came into power. The significance of this report was that it was treated by the Afrikaner as a blueprint for education and served as a guideline for the relation between church, state and school. Like their language, their Calvinistic religious background was to be protected by the Afrikaners. This determination to keep their religion free from other ideological influences had already become clear with the establishment of Christian-National Education schools in the Transvaal and Free State immediately after the Second Anglo Boer War (Behr, 1984:27). Ironically, the conviction that it was the Christian duty of

the white man to bring salvation to the heathen *black* people, by teaching them religious principles, was the main reason why *African* education started in South Africa in the first place; as early as 1658 (Rose &Tunmer, 1975:85). This same conviction was expressed in Articles 13 and 14 of the ICNO document, dealing with *Coloured* and *African* (*Bantu*) education respectively (Rose & Tunmer, 1975: 120, 127). These two Articles stated clearly the responsibility of the white people to Christianise the *non-white* races, but with certain reservations, namely that cultural segregation and a system of separate development would be maintained, as well as that the *Coloured* and *African* populations were subordinated to the white man, and specifically, to the Afrikaner. Although the ICNO document was an expression of the Afrikaners' Calvinistic view of what their own education system should entail, the dominance gained by this group in the political sphere in 1948 implied that the basic principles underlying this document could pose a threat to other cultural groups in South Africa.

In 1949 the new nationalist government appointed a commission under the chairmanship of Dr. W.M.M. Eiselen with the specific assignment of planning the education of "Natives", but with the premise that there should be a distinction between White and *Black* education and that the *Africans* should be considered an independent race (Rose & Tunmer, 1975:244). In their report the Eiselen Commission, like earlier educational commissions, also mentioned the lack of direction and proper aims of *Bantu* education. They attributed this to the fact that there was no clarity about the proper place of *Africans* in South African society. Two further important findings were that the *Africans*' main aim with education was to obtain a certificate which could help them to improve their economic position, rather than for personal development and the non-material value of a better education. The second significant finding was the *Africans*' extreme aversion to an education system which was different from that of the white population, the reason being that they considered an education system specially designed for the *Bantu* as inferior, producing inferior qualifications and thus preventing them from competing on an equal footing in the job market. The teachers, especially, felt very strongly about a uniform education system (Union of South Africa, 1951:104 in Rose & Tunmer, 1975:244,245). The teachers would play a significant role in the development of *African* education. Teacher strikes and stay-

away actions during the 1980s and early 1990s forced the government to take notice of their grievances, although this was to the detriment of their matric and other students.

The recommendations of the Eiselen Commission (1951) would bring about radical changes in the education system for *Africans*. In spite of the *Africans*' aversion to a separate education system, a special Bantu Education Department with a curriculum which would emphasise *Bantu* culture, was proposed. The organisation of this education system would also be different. Instead of the normal two division (primary and secondary) school system which was used for the other population groups in the country, there were four different types of school. Both the primary and secondary schools were divided into two sections. At that time the primary school up to grade 8, was already standard. Because of the very short span of school attendance of the *Africans*, often only three years, schooling turned out to be of no value to the pupils afterwards. In an effort to make the lower primary years more significant, the Eiselen Commission recommended that the primary school should also be split in two, namely a lower primary (grades 1-4) in which students automatically progressed to the next standard, and an extended higher primary school (grades 5-8). Secondary schools were divided into Junior High Schools which offered only grades 8-10 and Senior Secondary Schools which offered the full five years from grade 8 to grade 12 (matric) (Geber & Newman, 1980:65; Behr, 1988:107-109; Hartshorne, 1992:34,35). The reason offered for the duplication of grade 8 in primary and secondary school was that many *Africans* left school after the completion of primary school and that those who proceeded needed an extra year to reach the level required for the Junior Certificate examination, probably because tuition in the secondary school was in a "foreign language" (Union of SA, 1951:140,141 in Rose & Tunmer, 1975:255). Which kind of school the pupils would attend was determined by what was offered in the geographical area where the student lived and not by the individual's potential to pass matric and go on to higher education (Geber & Newman, 1980:81).

The Commission stressed the fact that education should prepare the individual for his/her later life in society and suggested that a society should be developed in which the *African* could apply what had been learned at school. To afford this, the

Commission recommended the economic development of the Reserves (Behr, 1988:15). Although this recommendation fitted into the National Party's plans for segregation, the actual homeland policy on the basis of separate development was proposed a few years later, in 1954, by the Tomlinson Commission.

There was strong opposition to the financial implications of the Eiselen report and the detailed recommendations were not accepted. The Bantu Education Act, No 7 of 1953 once again placed *African* education under the control of central government, in a separate Bantu Education section under the Department of Native Affairs. The minister of Native Affairs at that stage, Dr. H.F. Verwoerd, was given very wide powers. In his 1954 Senate speech about the curriculum, he acknowledged the frustrations created by the previous curriculum by training the *Africans* for "white collar positions" to which they were not entitled (Hartshorne, 1992:40). Dr. Verwoerd also stressed the importance of fostering the *Bantu* culture and of preparing the *Bantu* for service in his own community and to build a *Bantu* economy, because in the European community the *Bantu* were not allowed into positions of employment beyond certain forms of labour (Rose & Tunmer, 1980:266). In order to accommodate more primary school children the school day was reduced from four and a half hours to three hours and double shifts of schooling per day - the so-called platoon system - was introduced.

New lower primary syllabuses for *Bantu* schools were published in 1956. They were drawn up by white officers in the department without consulting *black* teachers, parents or other interest groups about aspects of *African* culture which would form part of the new curriculum. The two fundamental changes were, however, that the mother tongue was introduced as medium of instruction throughout the primary school and that Afrikaans was introduced as a compulsory subject, on the same level as English. Although, from an educational point of view, the understanding of the child is probably facilitated by mother tongue instruction, especially in the lower primary classes, it caused several problems for *Africans*. Many pupils who were used to only mother tongue tuition in the primary school found the use of English as medium of instruction in the secondary school extremely difficult. English or Afrikaans was also the language of higher education and of the economy, which meant that in a multi-

lingual country the use of the mother tongue as medium of instruction in both the lower and higher primary school might hinder the further progress of *Africans* (Hartshorne, 1992:40).

The syllabus was revised in 1962 and again in 1967, at which stage higher levels of arithmetic were included. According to Hartshorne (1992:41) the inferiority of *African* primary schooling was not due to the syllabus as such, apart from the tendency to overload it. The problems stemmed from wider curriculum issues related to the language medium policy, teaching methods, lack of facilities, text books and stationery, under-qualified teachers, the teacher:student ratio, the shorter school hours due to the platoon system, fatigue because of malnutrition, poor home environments and a general lack of funding.

Considerable economic growth marked the decade after the passing of the *Bantu* Education Act in 1953. The realisation that the economic potential of the country was being hampered by the shortage of trained and skilled manpower brought the lack of technical training facilities for *Coloureds* and *Africans* into focus. An Education Panel was appointed in 1961 to investigate how the manpower needs projected for 1980 could be met (Rose & Tunmer, 1980:272-275). This Panel recommended the establishment of "fully equipped and adequately staffed" technical colleges for *non-whites*. Their second report, published in 1966, which focused on the possibility of finding sufficient people to be trained, dealt with the question of *African* intelligence. The Education Panel stated that, until the schooling and socio-economic circumstances of the *non-white* population were improved, no valid comparisons could be made between white and *non-white* intelligence. The Panel recommended the upgrading of existing teachers' qualifications and skills rather than the training of new teachers, and warned that if funds were not made available for the upgrading of *non-white* education, economic progress would be jeopardised. If one looks at the situation six years later, as described by Hartshorne (1992:45), the level of teacher qualifications was still far from ideal. In 1972 about 16% of all teachers in *African* primary schools had no professional qualifications, 29% had grade 8, almost 50% had grade 10 and only 4.6% had grade 12 or a higher qualification.

Another concern in *black* education was that so many pupils were older than white pupils when they started school. The difference in age between white and *black* pupils in the same standard varied between one to three years. With the extra grade 8 year in primary school added, it meant that by the time some of the *black* pupils went to high school they were already four years older than their white peers. The extent of the difference is illustrated by the figures stated by Behr (1984:190) showing that 47 percent of *black* pupils in grade 7 were over the age of 14 in the year 1974. The effect of the age difference of pupils in the same standard on teaching and learning will be discussed later (see 3.3).

During the period 1955-1975 *black* and white pupils followed the same syllabus for the Senior Certificate examination. The actual examination was, however, different. Since 1962 the *black* candidates had written a National Senior Certificate examination which was administered and marked by officials in the Department of Bantu Education, while white candidates wrote the various provincial matric examinations. In the end the Department of Bantu Education had full control over all aspects of *black* matric examinations, with only the Joint Matriculation Board to report to - a Board which did not supervise the activities of the Department very closely. Although the numbers of *black* pupils who reached standard 10 increased from 2 097 in 1967 to 9 009 in 1975 (Hartshorne, 1992:71), the matric results of *black* candidates during this period showed no relative improvement. Throughout the period 1967-1975 about one-third of the *black* candidates who wrote the Senior Certificate examination obtained matric exemption, while about one quarter passed without exemption. The irregularities surrounding these examinations would be one of the reasons for the strikes and riots by students and teachers which started in 1976 and continued till well into the 1990s.

While the syllabi for *black* pupils in standards 9 and 10 (grades 11 and 12) were the same as those for white pupils, this was not the case for the Junior Secondary school (grades 8-10). The following figures cited by Hartshorne (1992:73) from the annual reports of the Department of Bantu Education illustrate the deficiencies in the curriculum of the *black* junior secondary schools. In 1975, 48 124 *black* pupils, of whom 73,2% passed, took the Junior Certificate examination, but of the total 48 124

only 31,9% offered mathematics and 23,2% physical science as subjects. With the required pass rate for these subjects at 33,3 %, the apparent success rate was quite high. Although 69,3% of those who offered mathematics (10 633 candidates) passed their examination, and 77,2% (8 610 candidates) passed physical science, the average percentage mark in these two subjects was 40,3 and 42 respectively. The prospects for an improvement in these results were fairly slim, considering the lack of facilities, large classes and the fact that only about 37% of the teachers in *black* secondary schools had suitable minimum qualifications for the work they were doing. These are disturbing facts, since the level of academic preparation indicated by these results, which would form the foundation for further study in science and technology, is far from adequate.

A major curriculum change which affected both the primary and the secondary schools, took place in *black* education in 1975 when the duration of the eight year primary school course was reduced to seven years. The grade 8 class in primary school was removed, and *black* pupils now also proceeded to secondary school after completion of grade 7. Although this was a positive change in the sense that it made the duration of education in *black* schools similar to that of white schools, it had a very negative effect on the quality of teaching and learning as well as on the organisation of *African* schools. This sudden enrolment of both grades 7 and 8 pupils in secondary schools in the same year caused an unmanageable increase in student numbers in the first year of high school. This caused serious problems in the schools where classes had an average teacher:pupil ratio of 1:56, and where about 17,6% of the teachers were unqualified (Behr, 1984:191). To cope with this difficult situation some of the more experienced and better qualified primary school teachers were moved to the secondary school. This disrupted the primary schools, which in many cases were left with no leadership capacity.

Furthermore the compulsory instruction of Afrikaans as a subject, which had already become an issue in secondary schools, had now also been introduced into primary schools. When the unrest broke out in Soweto, starting on 16 June 1976 with mass-protest by about 6 000 school children (Behr, 1988:37), grade 7 pupils were also involved. Riots, violence, and student unrest which resulted in injuries, deaths and

damage to State and private property, spread all over South Africa, also to *Coloured* schools. In Soweto the unrest and school boycotting lasted for about eight months. The Cillie Commission (1977), which investigated the reasons for the unrest, found that the protest was caused by dissatisfaction with *Black* education in general, bitterness and frustration over the enforced learning of Afrikaans, as well as with the inferior standard of education, the poor quality of teaching, the lack of facilities and inadequate school accommodation. The perception existed among the *Africans* that their education system had been designed with the intent of keeping them uneducated and submissive to Whites. According to Behr (1984:197), this perception of discrimination against *non-white* people, brought about by the government's policy of segregation, was shared by the *Coloured* people.

After the 1976 Soweto riots, the situation in *Black* schools all over the country, as well as in some *Coloured* schools in the Western Cape, was very unstable. Unrest flared up from time to time and school boycotts and strikes were staged frequently by either teachers or students, mostly accompanied by stone-throwing and other acts of violence and destruction. The unrest in schools did not affect the matric results of *Coloured* pupils as badly as it affected the results of *Blacks*. Although there was a 10% drop in the pass rate from the previous year (1975) for matric candidates from *Coloured* schools, 2 036 (66%) of the 3 084 candidates who wrote the examination in 1976 passed. By the end of 1976 the number of *black* matric candidates all over the country was lower than it had been in the previous year and very few *black* matric students in Soweto wrote their final examination (Behr, 1985:195), although *black* matric candidates in other parts of the country sat for the examination. The uprising in Soweto did, however, make the government aware of the seriousness of the grievances of the *African* population, and consequently the events led to several reforms in *Black* education.

One of the first changes that took place was that the schools in Alexandra and Soweto were placed under direct control of the Department of Education and Training (Behr, 1984:198). The state took over the community schools and accepted responsibility for their maintenance. The three-phase education structure, pre-basic, basic and post-basic education, with the basic education phase made compulsory and free, as proposed by

the De Lange Commission (1981), was accepted in principle but not implemented. Since secondary education was considered the real problem area, little attention was given to the primary schools, except that Afrikaans was no longer compulsory in *Black* primary schools. In order to supply more vocationally directed training differentiated secondary school courses, designed to prepare the pupils better for either the workplace or for further study, were introduced.

Compulsory education for *Africans* was introduced in 1981 (Behr, 1988:104) in all areas where the community was prepared to accept the principle of education, and where the parents would take on the responsibility of ensuring that their children would attend school regularly and at least up to standard 5.

Several other changes took place regarding school preparation, teacher training and parent involvement in education. To reduce the number of *black* pupils who failed the first grade in school, school readiness programmes were introduced. According to data supplied by the Central Statistical Services (1997: 5.24, 5.27, 5.35), 24% of the *black* grade 1 pupils did not proceed to grade 2 at the end of 1976, compared to 11.5% of the *Coloureds* and 4.4% of the white grade 1 pupils. To address the problem of unqualified teachers, various forms of in-service training were introduced. By 1978 the student:teacher ratio in *black* schools was still about 49:1, according to Behr (1984:308) and this ratio differed significantly across population groups, being 29:1 for *Coloureds*, 27:1 for Indians and 20:1 for Whites. Realising the importance of parent involvement in the scholastic achievement of pupils, parent-teachers' associations were formed. Two (numbers five and six) of the eleven general principles as stated in the 1983 *White paper for the provision of education in South Africa* express the importance of the responsibility and involvement of society and parents in formal education (Behr, 1984:369,370; Education Bureau, 1987:8).

In spite of these and other positive steps in educational reform which were taken by the Department of Bantu Education, the confidence in and credibility of the Department was so low, especially in the urban areas, that many *black* schools did not implement the suggested programmes. In those places where implementation did take place, the value of these programmes was reduced considerably because of the low

credibility of the Department. Such was the state of affairs in *Black* education by the time the South African government introduced a new educational system, functioning within the tri-cameral constitutional dispensation (Bunting, 1994:5).

3.2.4 The period between 1984 and 1994

This was the period during which the students who are presently studying at undergraduate level, and who are the focus of this study, were at school. While some progress was made during the early part of the 1980s, Hartshorne (1992:49) states that the political and social situation, together with the deterioration in schools, was such that there was no guarantee that any of the programmes introduced by the Department of Education and Training (DET) to improve *black* education were any longer being implemented by the late 1980s.

In spite of the fact that compulsory education was introduced in 1981 and free education (including text books and stationery) for all pupils in DET schools was made available from 1986 (DET, 1986:2 in Behr, 1988:106), the drop-out rates of *black* and *Coloured* pupils were still very high. Table 3.1 illustrates the progression of pupils through school before and after compulsory education was introduced in *black* schools, and highlights the situation at stages where there was some change in the curriculum. In standard 3 (grade 5) the mother tongue was replaced by either English or Afrikaans as medium of instruction, standard 5 (grade 7) marks the end of the primary school phase, standard 6 (grade 8) indicates the start of secondary school, in standard 8 (grade 10) the Junior Certificate examination was written, and it is the year in which pupils usually turn sixteen, thus reaching the end of compulsory schooling. The starting date of the first period, 1976, was chosen because that was the year of the Soweto riots, and the second period was chosen to end in 1994, the year in which the new ANC government came into power.

As can be seen in table 3.1, there is a relatively small difference in the drop-out rate of *Coloured* pupils in the two groups starting in 1976 and 1983 respectively, during the first five years of schooling, despite the fact that school attendance was voluntary for the 1976 group during this period. Since compulsory education for *Coloureds* was only phased in by 1980, it had become compulsory for children in the 1976 group to

attend school from standard 3 (grade 5) onwards. Thus the improvement in persistence rate between the first and second groups after standard 3, was not due to compulsory schooling, but could probably be attributed to better school circumstances.

Table 3.1 Comparison of progression at school of different population groups during 1976-1987 and 1983-1994

	Black				*Coloured*				*White*			
	1976+		1983+		1976+		1983+		1976+		1983+	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sub A	814 975	100	1023 163	100	111 577	100	102 981	100	87 830	100	80 313	100
St. 3	486 243	59.7	688 221	67.3	80 010	71.7	80 907	78.5	81 346	92.6	76 817	95.6
St. 5	372 454	45.7	549 938	53.7	63 970	57.3	72 217	70.1	79 691	90.7	75 112	93.5
St. 6	317 944	39.0	563 568	55.1	52 039	46.6	62 974	61.1	83 738	95.3	77 774	96.8
St. 8	250 604	30.7	444 062	43.4	36 935	33.1	47 316	45.9	82 549	94.0	76 074	94.7
St. 10	156 822	19.2	437 817	42.8	18 977	17.0	25 707	25.0	67 605	77.0	65 961	82.1

(Central Statistical Services 1997: 5.23, 5.26, 2.34. Statistics for *Blacks* include TBVC states and former self-governing territories).

In spite of the 8% improvement in the number of *Coloured* pupils who stayed on in school until matric, this was still only 25% of the original number of pupils in the group who enrolled in Sub A (grade 1). This might be an indication that, compared to the statistics for the white population, either the education system for *Coloureds* or their social environment did not encourage or enable the pupils to complete their full school career to standard 10 (grade 12). The second group of *black* pupils apparently did much better after compulsory schooling was introduced. However, this might be a false impression, taking into account the problems which accompanied DET examinations during the 1990s and the unreliability of matric results (Hartshorne, 1992:84).

As the protest and revolt continued and intensified during the 1980s, *black* secondary education deteriorated to such an extent that the whole learning environment in many secondary schools in the metropolitan urban areas disintegrated. *Black* teenagers took the law into their own hands, refused to accept the authority of teachers, stayed away from school and blamed everything on the system when they failed their examinations. The irony of this period of strife is that the youth became the victims of their own freedom. An analysis of the matric results during the 1980s illustrates this point. From 1980 until 1989 a total number of 1 069 035 *black* candidates enrolled for grade 12,

but 533 620 (49,9%) of these pupils failed the final examination (Hartshorne, 1992:81). During the same period 597 647 white pupils entered grade 12, of whom only 10% failed, and 153 181 *Coloured* pupils entered, of whom 28,8% failed (Central Statistical Services, 1997:5.23, 5.26, 5.9). Although some of these candidates persisted and attempted to pass the examination at a later stage, the majority dropped out of the system after 12 years of schooling, without a Senior Certificate. This implied that many *black* youths did not succeed in obtaining a matriculation certificate, were often unemployed and disillusioned and could resort to criminal activities and gangsterism. The management of these young adults would become one of the crucial problems of the 1990s.

The 1989 matric results were the worst since 1962. The following figures (calculated by Hartshorne, 1992:83, from the statistics provided by the DET in Hansard, 1990) illustrate the dismal state of *black* secondary education by the end of the 1980s. Of the 60 657 matric candidates who were in DET schools in 1989, not one obtained an aggregate A symbol, only 0,6% passed with an aggregate B symbol, 5,7 with a C symbol, 37,5% with D, and more than half of the candidates passed with an aggregate F symbol (33-39%). Apart from the negative effect which the collapse of the school system had on the matric results, Hartshorne (1992: 82-85) also emphasises the inefficiency of the DET officials regarding the organisation and marking of examinations, and explained their role, as well as that of the Joint Matriculation Board, in the deterioration and unreliability of *black* matric results during the 1980s and early 1990s.

At a time when mechanisms for quality assurance in education were the focus of attention in international education circles (see 2.2.2), there were still vast differences in the quality of education offered by the various South African Departments of Education, with *black* education under the DET of the poorest quality. By the end of March 1990 not a single school in Soweto was functioning, and the department had no control over the situation (Hartshorne, 1992:49). A comparison between the matric results of *black* candidates during the time when the same syllabus for standards 9-10 (grades 11-12) was prescribed for all South African schools (see table 3.2) and results during the time of different syllabi under a tri-cameral political system with separate

education departments (see table 3.3) illustrates the deterioration in *black* education. In both these tables the data in the second column indicate the total number of *black* matric pupils in South Africa, and the heading *Senior Certificate* means students passing the Senior Certificate examination without matric exemption. All percentages are calculated in relation to the total number of *black* standard 10 (grade 12) pupils (column 2) for that particular year.

Table 3.2 Matric results of black candidates during the period 1967-1975

Year	Total	Entrants for Exam		Matric Exemption		Senior Certificate		Total passed	
	Std 10	No	%	No	%	No	%	No	%
1967	2097	2039	97.23	485	23.13	482	22.99	967	46.11
1968	2380	2289	96.18	775	32.56	491	20.63	1266	53.19
1969	2698	2624	97.26	877	32.51	865	32.06	1742	64.57
1970	2938	2846	96.87	1013	34.48	843	28.69	1856	63.17
1971	4065	3818	93.92	1326	32.62	1062	26.13	2388	58.75
1972	4814	4541	94.33	1801	37.41	1110	23.06	2911	60.47
1973	5736	5492	95.75	1899	33.11	1327	23.13	3266	56.94
1974	6732	6420	95.37	2087	31.00	1354	20.11	3441	51.11
1975	9009	8445	93.74	3520	39.07	1880	20.87	5400	59.94

(Annual reports of the Department of Bantu Education in Hartshorne 1992:71, 72)

Table 3.3 Matric results of black candidates during the period 1985-1992

Year	*Total	Matric Exemption				Senior Certificate				Total passed			
	Std. 10	Rep	TBV C	Total	%	Rep	TBV C	Total	%	Rep	TBV C	Total	%
1985	107022	5784	4548	10332	9.65	18666	11232	29898	27.94	24450	15780	40230	37.59
1986	127515	7610	5875	13485	10.58	25844	13602	39446	30.93	33454	19477	52931	41.51
1987	156822	15415	8940	24355	15.53	41928	17801	59729	38.09	57343	26741	84084	53.62
1988	191399	21081	9370	30451	15.91	55230	19570	74800	39.08	76311	28940	105251	54.99
1989	218983	13426	6850	20276	9.26	47231	18562	65793	30.04	60657	25412	86069	39.30
1990	270724	13523	7626	21149	7.81	51761	21459	73220	27.05	65284	29085	94369	34.86
1991	317860	21370	12005	33375	10.50	65944	25571	91515	28.79	87314	37576	124890	39.29
1992	363027	24093	11485	35578	9.80	8424	33307	41731	11.50	32517	44792	77309	21.30

*TBVC-states included
(Central Statistical Services 1997:5.58, 5.9)

Although the decline in the pass rate is evident from the comparison between tables 3.2 and 3.3, it is necessary to take note of the steep escalation in enrolment of matric pupils. In the first period alone (1967-1975) there is an increase of 330% in student

numbers, while during the 10 years between the end of the data in table 3.2 (1975) and the beginning of the second period starting in 1985, the student numbers have multiplied ten times. The facilities did not improve accordingly, neither did the number of available teachers - let alone suitably qualified teachers - increase to the same extent as the pupils. This caused even worse school circumstances with even larger classes.

The comparison made by presenting the data in these two tables serves several purposes: it illustrates the decline in the pass rate during the period when the present undergraduate students were at school; it emphasises the complexity of the problem, of which just one aspect is explained in the previous paragraph; it raises questions about who and what is really responsible for the state of *black* secondary education; but it leaves no doubt about the need to upgrade the educational background of the students who are products of this educational system, and who enter our universities.

The same conditions which dominated *black* secondary education during the 1980s persisted into the 1990s. What follows is only a brief further discussion of the education system until 1994, when the ANC government came into power, and of the first two years after the election. By that time, 1996, all the students who are the focus of this study had finished their school career.

Schooling collapsed in many parts of the country in 1992. According to the DET's Annual Report released in April 1993, more than 16 000 instances of disruption took place throughout the country, and 11 million pupil days were lost. Of these disruptions 23% of the incidents took place in the Johannesburg region and almost 17% in the townships on the East Rand. The lowest pass rates were also recorded in these areas (Chisholm & Kgobe, 1993:2).

During the first term of 1993 the Congress of South African Students (COSAS) campaigned for lower matric examination fees and the occupation of under-used white schools. They were supported by other student organisations like the Pan Africanist Student Organisation (PASO) and the Azanian Students Movement (AZASM). The 'go-slow', which started in February 1993, spread from Soweto to Cape Town and Port Elizabeth and in early March also to Mamelodi (Pretoria). Only after the National

Education Co-ordinating Committee (NECC) in the Southern Transvaal region threatened to occupy white schools did the DET reduce the matric examination fees from R72 to R24. The NECC also pressed for other changes, like more textbooks, laboratories, libraries and teachers at *black* schools, a government fund to assist *black* students through tertiary education, and increases in teacher salaries.

Teachers from the Soweto-based South African Democratic Teachers Union (SADTU) staged a week-long sit-in at the DET Johannesburg offices in protest over the retrenchment of 30 teachers (Chisholm & Kgobe, 1993:5). Strikes extended to Venda and Qwa Qwa, and after rumours that 200 teachers were going to receive early retirement packages, 92% of SADTU members planned a national strike starting on 24 May, 1993. This strike was averted, only to be resumed in August, when SADTU members went on strike for two weeks. During this strike, the negotiations, which were about across-the-board salary increases for teachers, accomplished increases for lower-paid teachers. The strike had mixed results: it alienated large sections of the community, but it gained some concessions on teachers' salaries, increased teachers' confidence, and the unquestioning subservience of teachers to education authorities had been broken. The most important consequence was, however, the loss of school time. Where teacher strikes took place, only 15 to 20% of the matric syllabus had been covered and in the time left, about 13 school weeks, probably another 10% could be covered. The cost of the victory was extremely high.

Various strategies were used in an effort to compensate for the lost school days. Some of these, as described by Motala & Tikly (1993:2), were study groups organised by pupils in the absence of teachers, schools setting up intensive holiday learning programmes, and 'catch-up' programmes implemented in different areas, but not everywhere with the same degree of success. In October 1993 the NECC requested a two weeks postponement of the matric examinations. The DET's consent met with disapproval from the National Professional Teachers Organisation of South Africa (NAPTOSA) as well as from school departments in KwaZulu and Bophuthatswana who said that students who were ready for the examinations would be disadvantaged by the postponement. By November, more than five months of schooling had been lost due to strikes, boycotts and violence (Motala & Tikly, 1993:2). The strikes, sit-ins and

conflict in schools during 1993 did not predict a smooth transition into the year of the election.

3.2.5 The years since the election 1994 - 1996

The year 1994 started with discontent after the publication of matric results, and angry accusations across the political spectrum because of the poor pass rate of DET *black* matriculants. Only 38.3% of *black* matriculants passed the 1993 final examination (Greenstein & Mkwanazi, 1994:1). The public reaction was different from that of previous years, when the government received all the blame for the high failure rates. In 1994 everybody blamed somebody else for the poor results. The National and Conservative Parties blamed SADTU and the teachers' strikes, as well as stay-aways by pupils and the destruction of school property. The Azanian Students Convention (AZASCO) blamed the education system, the Inkatha Youth Brigade blamed the organisations that disrupted *black* education. The NECC, SADTU and the Congress of South African Students (COSAS) blamed the lack of facilities in *black* schools. The Pan Africanist Congress (PAC) blamed SADTU, the DET, the homeland departments and parents who failed to intervene in the education crisis (Greenstein & Mkwanazi, 1994:1).

The DET offered pupils another chance to write a supplementary matric examination in March 1994, irrespective of the percentage they had achieved in the examination at the end of 1993. A joint project to assist pupils in their preparation for the supplementary examinations was launched by the DET and the National Education and Training Forum (NETF) (Greenstein & Mkwanazi, 1994:1). According to the 1994 DET annual report (DET, 1994:133) 54 470 students wrote the March examination, but the report does not mention the final results.

By 1994 the qualifications of teachers in *black* schools were still not satisfactory. Out of a total of 49 887 primary school teachers, 907 (1.8%) had only grade 8 with a teaching certificate, while 8175 (16.4%) had only grade 10. Of this latter group 2 232 (4.5%) did not even have a teaching certificate. The situation was better in secondary schools, with only 167 (0.6%) teachers having a grade 10 qualification and 801 (3%) only a matriculation certificate (DET, 1994:119). However, if one takes into account

the fact that these teachers did not have a better qualification than the pupils they were teaching, and that the average pupil:teacher ratio was about 40:1 it means that potentially more than 32 000 pupils had been exposed to these underqualified teachers. In reality the numbers are probably higher. The situation in the self-governing states was even worse, with the number of teachers in secondary schools with only a matriculation certificate or less, totalling 3197 (9%), and with class sizes of 90:1 in some of the Eastern Cape schools not an uncommon phenomenon (NCSNET, 1998:38).

Contradicting the ANC's Draft Policy Framework for Education and Training which was published in January 1994 and which proposed a more centralised system, the Interim Constitution gave the nine provinces power over all aspects of education, except higher education (Chisholm, 1994:2). This indicated a lack of communication between various role players in the ANC. Task teams, commissions of inquiry and educational fora were shaping the education system of the new ANC government. For the greater part of 1994 the emphasis at both national and provincial level was on budgetary, legislative and bureaucratic reorganisation. At school level, provision had to be made for school buildings, feeding programmes, textbooks and teachers.

Curriculum issues which focused on a more representative approach and which would reflect *African* thought and positive *black* images and values, instead of the existing dominating Eurocentrism, were discussed. Greenstein & Mabogoane (1994:8) mention that both the National Education and Training Forum (NETF) and a Council for African Thought, consisting of *black* academics and intellectuals, were working towards a more relevant and representative curriculum.

In September 1994 the *Draft White Paper on Education and Training* was published, as a first official statement from the Ministry of Education since the 1994 elections (Tikly & Motala, 1994:1). An important initiative proposed in this document, and underlying the restructuring of the entire system, was the National Qualifications Framework (NQF). This was to be developed jointly with the Ministry of Labour and aimed at linking all levels of learning, as well as allowing learners entry to the system from various starting points. The NQF is an overall national framework which would

provide for the registration of national standards and qualifications in the total South *African* education system, and which is based on outcomes reached at different levels within the system (NCSNET, 1998:44). This concept was first introduced by the ANC in the Policy Framework for Education and Training. The NQF, as well as another proposal in the Draft White Paper, namely the appointment of a Commission of Higher Education (CHE) to put forward proposals for the restructuring of tertiary education, would have a large impact on the organisation of the higher education sector.

The Draft White Paper caused sharp reaction from the white community in relation to school governance. The autonomy of schools was considered to be of the utmost importance if standards were to be maintained in Model C, state-aided schools. Although the White Paper did not specify exactly how the governance and funding of schools should be organised, the Minister of Education, Sibusisu Bengu, expressed some definite views. These were, according to Greenstein & Mabogoane (1994:3-4), that the ownership, governance and funding of Model C schools derived from the apartheid era, and that since many of these schools were under-utilised, they should increase their enrolment of *non-white* pupils. The Minister of Arts, Culture, Science and Technology, Ben Ngubane, pointed out that there were about 287 000 empty places in white (predominantly Model C) schools while there was a shortage of about 2 million places in *black* schools. At that stage many schools in Gauteng and the Western Cape had already started to enrol *black* pupils. It was pointed out that there were 100 000 *Blacks* in Model C schools, 10% of the total, and there were also *black* parents who were concerned about the continuation of the system. However the real issue was that the Model C school was seen as the symbol and assurance of white privilege. The challenge would be to resolve this issue in a constructive manner by devising a system which would preserve the positive aspects of the Model C school (parental involvement, community control, sense of ownership and responsibility) while allowing a wider range of communities to benefit from the positive effects of these schools.

The beginning of 1995 marked the first school year that would be managed by the new national and provincial Departments of Education. It was also the first time that all former racial restrictions on the registration of pupils were abolished, and parents

could enrol their children at any school of their choice (Mkwanazi, Twala, Mwina & Greenstein, 1995:4). Although this was a very significant event in the history of South African education, it was not implemented smoothly. In many cases the registration process was not well organised, *black* schools ran out of space, stationery was not yet available, and hundreds of pupils in both townships and rural areas had to be turned away. There was also an acute shortage of classrooms and teachers.

Another problem was the meaning of free and compulsory schooling, what was understood by this, and the issue of school fees. The ANC's election promises of free and compulsory education created confusion about registration fees before admittance, at some *black* schools, and about school fund contributions at state schools. Admission issues and school or tuition fees would become a major problem in all sectors of South African education.

The second version of the *White Paper on Education and Training* was released in February 1995. The absence of an implementation strategy in the White Paper (Mkwanazi et al., 1995:2) and the fact that no reference was made to the management of Model C schools, were considered unfortunate omissions on the part of the policy makers. However, there were other positive aspects in the White Paper, such as the emphasis on the critical need to pay attention to science and mathematics curricula in order to improve the abilities in these subjects of both teachers and pupils. Mkwanazi et al. also refer to other positive outcomes of the White Paper.

Many of the new initiatives which were undertaken during this period were related to the Reconstruction and Development Programme (RDP). A series of programmes to upgrade the science and mathematical abilities of disadvantaged children was launched in 1995. One of these was the SYSTEM-programme (Students and Youth into Science, Technology, Engineering and Mathematics) which had been proposed by the Implementation Plan for Education and Training (IPET) in 1994. It was aimed at the top 10% of the students who had taken science and mathematics for their Senior Certificate but failed. According to Mkwanazi et al. (1995:4) this programme was targeted at approximately 9 000 students nation-wide and it would be centrally funded, but managed at provincial level.

There had also been other initiatives like the PRISM-project (Planned Route Into Science and Maths), based at the Mangosuthu Technikon (Mkwanazi et al., 1995:4). This project was targeted at post-matrics, and the aim was to improve their science and maths skills in order to improve their chances of gaining entrance to a university. PRISM also ran a life-skills programme on Saturday mornings, and shared its staff, material and equipment with another initiative, Masifundisane. This project was aimed at upgrading grade 8-12 pupils' proficiency in English as well as their maths, science, accountancy and business economics skills.

The problems related to the over- and under-supply, as well as the qualifications and salaries, of teachers, were still major issues in all the provinces. The Azanian Students Movement (AZASM) once again campaigned for the removal of white teachers from *black* schools (Mkwanazi et al., 1995:5). For the sake of the pupils, SADTU opposed this campaign, stating that white teachers were often better qualified and could teach certain skills with which *black* teachers had not been equipped due to their inadequate education.

There had also been several curriculum changes during 1995. The NETF suggested a core curriculum for everybody, irrespective of race or religion, that Afrikaans would no longer be a compulsory school subject, and that any of the eleven official languages could be used as medium of instruction, provided that pupils learn a second official language in grades 4-6 (Mkwanazi et al., 1995:7). A student-centred, developmental approach should be followed, especially in the lower primary school, to encourage pupils to learn and to move away from the over-emphasis on examinations, a system which stifles a deep approach to learning and creates a fear of failure in many students.

The situation in schools was fairly calm during 1995, the first full year of schooling under the Government of National Unity (GNU). Although there were several incidents of racial clashes in former white schools, the disruption of *black* schools was limited. This was also the first time that the reporting of matric results was not categorised by school, or by Education Department, that is by race, but only by province. The reason given for this was that it would promote an integrated and unified system. There were, however, serious doubts in education circles as well as in

national research centres like the Central Statistical Services (CSS) and the South African Institute for Race Relations (SAIRR) about the wisdom and validity of such a system (Mokgalane & Vally, 1996:4). Not only did it disguise some real problems in certain areas, but the results were also misleading. For example, the province with the highest *African* population, and of a very low socio-economic status, the Northern Province, ranked the lowest, while the Western Cape, with a much smaller very poor *African* population, ranked the highest. There were also other factors which made the comparison between whole provinces, instead of between schools, invalid. Some of these were the difference in leadership and management capacity in provincial and school governance, the number and quality of teachers, the availability and condition of classrooms and facilities, and the involvement of parents and the community.

Two of the key issues in education during 1996 were the redeployment of teachers and the offer of voluntary severance packages in an effort to achieve equity (Chisholm & Vally, 1996:6). Both these matters caused mixed reaction, and racial tension. White parents considered it a mechanism to get rid of the best teachers, because those most likely to get employment elsewhere were the experienced mathematics and science teachers. The *Coloured* community feared that redeployment would destroy the quality of their best schools if teachers, mainly women who could not move to rural areas because of family commitments, were retrenched. The insecurity generated by the policies left teachers confused and demotivated. In *black* communities, where the problem of overcrowded classrooms because of inadequate numbers of teachers was acute, any opposition to redeployment signified resistance to equity (Chisholm & Vally, 1996:7).

Early in 1996 unrest flared up again in *black* schools. According to Chisholm & Vally (1996:17) the main reason was the frustration of pupils, teachers and parents with the violence and offences like robberies and rape committed in schools, as well as the state of disrepair of the school infrastructure. The violence was probably related to gangster activities and conflict between groups of activists. In Gauteng a Code of Conduct was drawn up to define the roles and responsibilities of various parties, to promote self-discipline and to institute disciplinary and grievance procedures. In spite of the fact that the Code had some credibility among student groups, the lack of leadership

capacity in schools prevented the effective implementation of the Code (Chisholm & Vally, 1996:18).

The South African Schools Bill, which was first distributed in April 1996, (Chisholm & Vally, 1996: 19) enhanced the power, responsibilities and functions of school governing bodies. Although one would expect that the leadership and management skills needed to cope with these new tasks would make capacity-building a priority in all the provinces, this was not the case. Some of the provinces made use of the training opportunities provided by the RDP Culture of Learning Programme, which aimed at capacity-building in school governance, while others used the money allocated for this purpose to cover other expenses.

When the South African Schools Bill was introduced in Parliament in August 1996 (Motala 1996:6), some of its key features were compulsory education for all children between the ages of six and fifteen, and the state's responsibility to make this possible; the funding of capacity-building by the provinces, and the development of a code of conduct for learners. However the rights and responsibilities of learners were not as clearly spelled out as in the draft version of the Bill.

Although the need for transformation of the curriculum had been discussed even before the election in 1994, the focus had been on structures and policies, rather than on content. A document released in 1996 by the Curriculum Development Working Group of the National Curriculum Development Committee (NCDC) also attended to curriculum content (Motala, 1996:12). Eight learning areas, which would form the core curriculum in schools, were identified. These would be applicable to all learners in the formal General Education band (the compulsory school years), as defined by the NQF. The system of education which was proposed by this committee would be phased in gradually at different stages of schooling. Further developments in officially defining curriculum content resulted in the identification of 12 critical learning outcomes by the South African Qualifications Authority (SAQA, 1997:6). The introduction of an outcomes-based approach to education in schools, without providing proper training for the teachers who were supposed to implement the new curriculum, would cause a great deal of confusion, not only in the already struggling

black schools but also right across the spectrum of people involved in curriculum development and implementation (Kgobe, 1996:9).

The 1996 matric examination, the first under a unified, non-racial government department, would once again cause a crisis in schooling. Rumours of a breach of security, and consequent leakages and sales of examination papers undermined the eventual credibility of the 1996 matric results (Kgobe, 1996:11). The various provinces had to accept complete responsibility for all aspects of the examinations, that is, the setting of papers, their distribution, marking, processing and the publication of results. Once again the lack of experience and the inadequate infrastructure in many areas contributed to ineffectiveness and irregularities regarding the whole process. In spite of all the irregularities, the matric results were more or less the same as in 1995, with an average pass rate of 53% (Govender, Greenstein, Greybe, Mokgalane, Samson & Vally, 1997:3).

This was the state of education in schools when the 1997 first year student group, whose academic preparation and progress at a higher education institution forms part of the focus of this study, finished their school career. In the following section the meaning of a culture of learning in the South African context will be discussed.

3.3 A Culture of learning

A school and a university are two special types of organisation with education as their main purpose. In his discussion of the different environments which influence students at a university, Nkomo (1984:3-8) refers to an administrative, a physical, a social and an academic environment. To these four can be added a technological and a psychological environment. The climate and the culture of an organisation form part of this psychological environment. The different environments in an organisation influence one another, and both separately and together they affect the performance of the people at all levels in the organisation. The higher the quality of the facilities in each environment, the greater is the probability that the human functioning within that environment will be of a high quality. Apart from the level of knowledge and abilities of the people within each environment, the psychological environment, that is, the

climate and the culture of the organisation, may determine the quality and the success of the organisation as a whole. Rousseau (1988:141,151) explains the difference between an organisation's climate and its culture. By climate is meant the prevailing atmosphere in the organisation, in other words, the individual's perception of the organisation, and this perception is influenced by the characteristics of both the organisation and the individual. The other component of the psychological environment, the culture of an organisation, is formed by the shared values (what is important) and beliefs (how things work) underlying the activities which are performed in order to reach the organisation's stated aims, and which interact with the organisation's structures and control systems to establish the norms (how things are done) within the organisation. Thus the climate is more an individual perception, while the culture is a collective way of doing.

In referring to a school as a non-profit organisation with its most important aim the facilitation of learning, one would expect that every school should have specific values and beliefs about learning, and that the governing body and the way the school structure is organised will interact with the teachers' and pupils' values and beliefs about learning, to form the norms which act as guidelines for behaviour in the schools. Thus one would expect to find a specific culture in each school which would represent, inter alia, the value attached to education, the approach to learning and teaching, the views held by school authorities regarding discipline and order in the school, and the norms which would determine the guidelines for acceptable behaviour of both pupils and teachers, as well as for what would be considered reasonable expectations from all stakeholders in the specific school environment. This conception of a learning culture in schools is supported by Sweeney (1992:69 in Masitsa, 1995:110) who states that the best schools are driven by key beliefs and values shared by school committees, principals, teachers, pupils, parents, and all others who have an interest in the school.

If these values, beliefs and norms create a climate in a school which fosters effective learning that results in achievement and a positive attitude towards learning, that school could be seen as an organisation with a culture of learning. If this is true, it implies that the difference in the behaviour of pupils and teachers in other schools in

similar circumstances is probably caused by the presence or absence of a culture of learning within those schools. It also implies that the quality of education offered in a specific school would be influenced by the learning culture of the school.

The 1988 World Bank study (1988:40 in Hartshorne, 1992:53) identified six areas which affect quality in schools: the training and use of teachers; textbooks and instructional materials; school buildings and facilities; language of instruction; nutrition and health of children; and an effective examination system. Problems in any one of these areas would lower the quality of education in a school. The circumstances in *non-white* schools, as described earlier in this chapter, indicate problems, in many cases, in all six of these areas. Consequently a very low quality of education can be expected in these schools. However, Greenstein & Mkwanazi (1994:13) refer to schools, especially in rural areas, that have managed to overcome poor circumstances by, inter alia, the improvement of the learning environment by changing its appearance with pictures and the painting of classrooms, increasing community and parent involvement, and adopting a child-centred teaching approach, which created a safe learning environment for the pupils in which they felt free to ask questions and to experiment with new ideas.

This would be much more difficult in urban areas, where the physical dangers caused by the activities of gangsters and out-of-work youths create a threatening and unsafe school environment, and where economic pressures often lead to the absence and total lack of involvement of parents. A study of Soweto youth by Geber & Newman (1980:52-57) revealed that the pupils who attended school did not consider the absence of their parents during the day as a sign of neglect, but rather complained that during the times when the parents were at home the strict discipline, the dictatorial attitudes of the father, and the lack of communication and acceptance of the young person as someone with opinions and feelings, caused frustration and conflict. The lack of respect for adults, whether for parents or teachers, and the rejection of authority were found to be a consequence of insensitive parenting. This was also found to affect the child's adjustment to school, causing an unwillingness to take responsibility for his/her work, a reluctance to follow instructions and accept guidance, and making the peer group a powerful force which can influence and control the

behaviour and attitudes of children.

Similar findings about the powerful and negative influence of school drop-outs and unemployed youths on their school-going peers have also been reported by Tidwell (1989:156, 157) among low socio-economic groups in the Afro-American context. In the same study Tidwell describes her findings about the positive influence of a home environment in which education is valued, and in which study and learning are not only a natural part of the child's upbringing, but where the parents are involved and interested in the education of their children. This implies that the home environment also contributes to a culture of learning. The effect of parent involvement on school achievement was also stressed by principals, teachers, parents and pupils in an investigation by Masitsa (1995:9-14) into the reasons for the poor matric results in the Free State.

An investigation of 16 schools, which all had a matric pass rate below 20%, by the Gauteng Committee on the Culture of Learning and Teaching (CCOLT) to identify the reasons for the breakdown of a learning culture in *black* schools, yielded the following important results: the very deprived socio-economic context in which schools had to function was one of the main reasons for conflict at various levels and consequently for the collapse of schooling; the pupil:teacher ratios were not an absolute indicator of pass rates; the absence of basic infrastructure, as well as the lack of effective leadership and management, undermined an ethos of learning (Motala, 1996:10). The way in which pupils were educated in South African secondary schools was authoritarian, teacher-dominated, content-driven and knowledge-based (Hartshorne, 1992:60). This not only created resistance against everybody in authoritative positions, but also promoted rote learning by pupils.

Rousseau's (1988) description of organisational culture states that the values and beliefs of the people in the organisation interact with the structures and control systems to establish the norms of the organisation. The important influence of the kind of leadership in a school on the norms, and thus on how things are done, or what is considered acceptable behaviour, now becomes apparent. The absence of leadership capacity in many schools (see 3.2.4), mismanagement by principals, the lack of

ownership of and accountability in school governance structures, the increased militancy of pupils (Motala & Tikly, 1993:5, 6), the violence and life-threatening interference by out-of-work youths, the lack of counselling to help pupils deal with traumatic experiences like rape and other forms of child abuse, the eviction of school principals by activist student groups, and the absence of any code of conduct in many schools (Greenstein & Mabogoane, 1994:7) all contribute to a total breakdown in the culture of learning.

Another factor which has a negative effect on a learning ethos in the classroom is the age difference among pupils. Before school attendance was compulsory, *non-white* parents sent their children to school when it was financially feasible and when it suited them (Geber & Newman, 1980:83). As discussed before, the age difference between pupils in the same class could vary between one and three or even four years (see 3.2.4). To expect from any teacher, more so from an under- or unqualified teacher, to adapt the curriculum to suit pupils with different levels of affective and cognitive development is probably unfair. Furthermore, the potential inner conflict of more emotionally mature pupils whose intellectual development is on the same level, or behind that of their younger class mates, might cause conflict with the teacher and/or with other pupils in the class, affecting the climate in the class negatively.

In the South African context where the teachers in *black* schools were often white, the climate in the classroom would become even more important. The white teacher held a position not only of higher authority, but also often of, at least perceived, higher status over the *black* child. If the teacher's recognition of the pupil is not in line with the pupil's self-concept, the child will, according to Hale-Benson (1989:86, 87), constantly engage in small battles with the teacher over status. When the relationship between the pupil and the teacher breaks down, the child will shut down psychologically and no further learning will take place, because the young child on entering school is much more sensitive to relational messages than to information transfer. Once this happens, the child usually turns to peers in the pupil sub-culture within the class for emotional and learning support, and that often results in school failure. Thus the climate in the classroom determines the amount of information transfer and how effectively the child's abilities and skills are developed.

The developing child is exposed to two major social systems which influence his/her choices, aspirations and expectations. These are the home and the school (Geber & Newman, 1980:5,6). The home provides children with the shared assumptions of the group to which they belong, and defines the social norms and accepted behaviour for a member of the specific group. The school, on the other hand, teaches the child to challenge these assumptions. The whole process of education aims at effecting changes in the cognitive, affective and social abilities of individuals. As the young person becomes more able to think and act independently, his/her perception, experience and evaluation of the world around him/her changes, together with aspirations and expectations of this world. Since learning in schools is not an isolated activity, but a process which takes place in a social context (see 4.3.2.1), the school acts as a socialising agent in the development of the individual.

The strength of the socialising impact of the school lies in its relation to the opportunity structure of the wider society in which it exists (Geber & Newman, 1980:84). The level of specialisation required to perform in the work environment, dictates the level of specialised training the individual would need in order to succeed in his potential work environment. The kind of work an individual performs, and the status attributed to it by the society in which he or she lives, determines the individual's position and role in that society, and affects his/her self-esteem. The dilemma of schooling is that it creates aspirations and expectations in the young educated generation, which makes it very difficult for them to have to accept that they can only get jobs that were previously performed by unskilled or illiterate people. The fact that South African society did not offer equal opportunities in the work place to all race groups, seems to have affected the attitude of parents, and consequently of their children, regarding the meaning of learning and how to succeed in a learning environment. This statement is supported by the following examples.

Already in the early 1950s, the Eiselen Report stated that the *Bantu* never applied in practice what had been learnt in school, because the economic incentives which should have been available to the *Africans* once they had left school were either absent or of such a nature that they undid what had been learnt at school (Union of South Africa, 1951:104 in Rose & Tunmer, 1975:245). The Report further stated that the existing

social and economic conditions determine the effect of schooling, and that economic conditions are also educative in the sense that they provide the incentive for the level of effort applied, or not applied, by students. This illustrates how the expectations students have about their future, influence their attitude towards studying.

As stated before (see 2.2.2), non-traditional students and their families value education because they consider it the gateway to a better income and higher socio-economic status (Nkomo, 1984:108,110; Tidwell, 1989:153). However, the expectations of upward mobility and the reality of not being able to achieve beyond one's racial confines because of job reservation, as was the case in South African society during the previous political dispensation, stifled the hopes and created feelings of incongruity in many ambitious, young *non-white* citizens (Nkomo, 1984:103). These feelings of despondency and powerlessness, and the perception that effort is not justly awarded with achievement, create an attitude which renders the need for hard work in order to succeed senseless. Since the values of the society from which one originates influence both the patterns *of* behaviour as well as the patterns *for* behaviour of members of that society (D'Andrade, 1990:65; 1995:xiii), this might be one of the reasons why the school's process of socialisation of *African* pupils to accept and practise the ethic of hard work was not effective (Nkomo, 1984:109).

Recently the national Department of Education has realised the need to create a culture of learning in *black* schools. Several projects and incentives have been launched to achieve this, and some of the previously militant student organisations, like COSAS, have started to support these efforts. Since July 1994 a national office responsible for the Culture of Learning Programme has been in operation (Chisholm, 1995:4). This office aims to reverse the absenteeism, lack of discipline, destruction and violence in *black* schools, and has a budget of R10 million to use on initiatives to restore a culture of learning in schools. Since its inception funds were allocated to all provinces for the training of agents of educational change and of school governing bodies in conflict resolution, management and administration skills.

COSAS had also begun a campaign to encourage teachers and students to restore a culture of learning. The code of conduct which they distributed for discussion was "Each One Teach One" (Mkwanazi et al., 1995:6), and was aimed at teachers who

tended to go on strike just before the examinations. The code also condemned vandalism, promoted neat and clean premises, punctuality, regular work and study hours, and requested teachers and students to sign a declaration in which they undertake not to damage or steal books or school property. It also proposed disciplinary committees which would consist of teachers, pupils and parents, and proposed that offences such as drug and alcohol abuse, intimidation of pupils or teachers, stabbing or raping of students or teachers, burning or damaging school property, or carrying weapons at school would result in expulsion. The idea was that all teachers and pupils should sign the COSAS pledge.

In 1995 the RDP set aside R100 million for a project aimed at developing a culture of learning and teaching in schools (Mkwanazi et al., 1995:5). The aim was to create an atmosphere which would foster learning and enable teaching in schools situated in disadvantaged communities. The national project focused mainly on the reconstruction and refurbishing of the dilapidated township schools and the expansion of learning opportunities in rural areas. The Gauteng Ministry of Education focused on projects to motivate teachers and pupils and change their attitudes to teaching and learning. In this province a Committee on the Culture of Learning and Teaching (CCOLT) was formed to assist the Ministry in identifying factors which contribute to a positive school climate (Greenstein, 1995:5). Although the provision of adequate buildings and facilities is important for the total restructuring of education, a real culture of learning can only be brought about if a belief in the value of education, as a way of personal development and not only as a means for economic progress, can be instilled in the hearts and minds of parents, pupils, teachers and school governing bodies of all communities.

3.4 Summary

In this chapter the factors that caused differences in the quality of education in South African schools, and the ways in which the education of under-privileged communities in particular, was affected, have been discussed. The most important of these factors were the separation between white, *black* and *Coloured* pupils, compulsory school attendance, school accommodation and facilities, the qualifications and abilities of

teachers, student:teacher ratios, the curriculum, the medium of instruction, evaluation procedures and school governing bodies. The origin of some of the discrepancies was traced, and reference was made to historical incidents which illustrated their presence and continuation in the South African education system since the beginning of the twentieth century. The circumstances prevailing in education at school level in the years immediately preceding and following 1994, the year in which the ANC government came into power, were described.

The discussion concluded with a brief perspective on the meaning of a learning culture, which would create a climate that fosters effective learning. The main reasons for the absence of a learning culture in many South African schools were identified as the low socio-economic context in which schools had to function, the violence and unsafe school environment, the absence of equal opportunities in the job market, the lack of parental involvement and leadership capacity in schools and the poor relationship between pupils and teachers. Initiatives by the South African government to create and restore a culture of learning in schools were mentioned.

In the following chapter cognitive and affective development, and the meaning of intelligence will be discussed.

CHAPTER 4

FACTORS DETERMINING THE POTENTIAL OF THE INDIVIDUAL TO SUCCEED IN HIGHER EDUCATION

The discussion thus far has sought to explain factors in the school and higher education environments which affect the success or failure of various groups of students. The focus now shifts to the individual and the personal environment. Because students enter the higher education environment with diverse mental abilities and cultural backgrounds, it is necessary to understand the effect of these factors on academic performance. In this chapter factors that determine the learning potential of individuals, such as cognitive development, intelligence, motivation, and the effect of the environment on each of these, are discussed. The influence of some of the researchers who have made significant contributions to the understanding of learning potential is highlighted, and the relevance of their theories to learning in a higher education context is explained.

4.1 Introduction

In the field of education, the concept *potential* is associated with giftedness as well as with underachievement, and thus with success as well as with failure to achieve as one should. There are five factors which are imperative for gifted people to succeed, and the absence of even one of these would lead to under-achievement (Tannenbaum, 1991:322). These factors are general ability, special ability (that is the specific area of giftedness), non-intellective factors (affective and conative), environment and chance. In the context of this study, where the focus is on what constitutes potential for any student to succeed in the higher education environment, only three of the five factors will be discussed; namely general ability, non-intellective factors and the environment.

The physical and psychological development of human beings is so intertwined, that a complete separation of the forces which impact on the total development of the individual is not possible. Researchers from various disciplines study human development from the perspective and focus of their field of specialisation. These disciplines, known as the "cognitive sciences", are philosophy, psychology, artificial

intelligence, linguistics, anthropology and neuroscience (Gardner, 1985: 7). In the discussion of potential in the context of this study, the perspective of two of these disciplines will be considered, namely cognitive psychology and to a lesser extent cultural psychology. The main focus will be on the understanding of how the human mind develops, how people learn, and how the environment affects development and learning. The discussion starts with the contribution of cognitive psychologists to our knowledge of cognitive development.

4.2 Cognitive development

The study of cognitive development investigates changes in the way people think at various ages, and how mental skills change with increasing physiological maturity (nature) and with experience (nurture). It deals with both qualitative and quantitative changes in thinking due to increased knowledge and abilities (Sternberg, 1996:425). The intensity of the debate over the dominance of either nature or nurture in determining developmental changes, has decreased with the realisation that it is neither the one nor the other, but rather the interaction between nature and nurture which determines the person's level of cognitive development. According to Sternberg (1996:426) maturation refers to relatively permanent changes in thought or behaviour due to ageing. Nurture, on the other hand, refers to any relatively permanent change in thinking or behaviour due to experience or learning. There are various theories of cognitive development. Some of these will be described in the following sections.

4.3 Theories of cognitive development

There have been three main influences on the study of cognitive development, namely the theories of Jean Piaget and of Lev Vygotsky and several theories of information processing (Sternberg, 1996:453). The first one to be described is the very comprehensive theory of Jean Piaget.

4.3.1 The cognitive development theory of Jean Piaget (1896-1980)

Piaget started his work with investigations into the reasoning strategies used by children. To gather information, he used "clinical" methods (asking probing questions)

and observation. There is a difference between Piaget's early and later work. Before 1930 his work consisted of an almost ad hoc collection of theoretical constructs to suit whichever phenomenon he was investigating, but during the 1930s his work became centred around an emerging theory of cognition based on cognitive structures (McShane, 1991:5).

Central to Piaget's theory are the following ideas:

- The theory is based on presuppositions about the existence and maturation of cognitive structures (Piaget, 1973 in Thomas, 1991:148);
- these structures evolve sequentially in stages, with each stage depending and building on development that has taken place during the previous one (Piaget, 1963:13-20 in Gross, 1985:30);
- the development of these structures is not predetermined, but depends on the interaction of the individual with the environment (Piaget, 1970:712);
- this interaction with the environment implies cognitive adaptation, which is brought about by alternating states of disequilibrium and equilibrium through an interplay between the processes of assimilation and accommodation. There is no assimilation without accommodation and vice versa (Piaget, 1970:708).

The mental structures, as defined by Piaget, consist of an abstract set of behavioural patterns and rules. These behavioural patterns are either innate (reflexes) or learned (habits), and the rules govern how things can be transformed, combined, classified, and so on. With age the nature of the mental structure changes, both in its ability to accommodate abstraction, and as in the extent to which it can represent the external world accurately (Gross, 1985:30). These changes take place in stages, which Piaget marked with approximate age brackets. Although the age at which each new stage appears may vary, the sequence of appearance stays the same. Each stage is characterised by a unique mental structure which has a pervasive organising effect on all mental functioning (Gross, 1985: 32; McShane, 1991:22). Piaget identified the four stages as a sensorimotor period, a pre-operational period, a concrete operations period, and a formal operations period (Piaget, 1970:711, 728; Van der Zanden & Pace, 1984:167-169; Gross, 1985:32-41; McShane, 1991:22-24; Sternberg, 1996:426, 429-435). The specific characteristics and abilities of children at each stage, as

described by these authors, and which are relevant for this study, are illustrated in table 4.1.

Table 4.1: Piaget's stages of development

Stage and approximate age brackets	Thought processes	Behavioural characteristics	Important accomplishments
Sensorimotor (birth - 2 years)	Increases in number and complexity of sensory abilities Show signs of mental, internal representation of external stimuli	Motor abilities at first reflexive Gradually conscious , intentional control over motor actions	Object permanence, i.e. mental representation of objects out of sight Progressive integration of perceptual and motor skills
Pre-operational (2-6/7 years)	Internal representation - thoughts and memories of objects Ability to manipulate verbal symbols for objects and actions Limited ability to manipulate concepts Centralised thought	Still egocentric Increase in use of symbols and signifiers Active intentional experimentation with language Ability to act upon things in their absence Inability to decentre, i.e. to focus on more than one variable or feature of an object or action	Increase in language and concept development
Concrete-operational (6/7 - 11/12/13 years)	Ability to manipulate mental representation of concrete objects Ability to decentre Thinking is reversible, i.e. realises actions can be reversed Mental conservation of quantity in spite of changes in appearance	Deals with objects directly Rule based. The same general principles can be discerned in a wide range of behaviour Ability to combine (+), reverse (-), order (<), substitute (=).	Conservation, i.e. ability to conserve quantity when perceptional changes take place Ability to discern relationships between elements and properties of objects, can accommodate transformations Mathematical reasoning becomes possible
Formal-operational (11/12/13 years onwards)	Mental operations on abstractions and symbols which might represent other than only concrete objects	Deals with the "result" of actions upon objects Can handle more complex abstractions Both deductive and inductive reasoning Problem solving is possible	Ability to reason hypothetically - can handle "what-if" possibilities

(Compiled from Piaget, 1970; Van der Zanden, 1984; Gross, 1985; McShane, 1991; Sternberg, 1996)

Piaget stated clearly that the biological maturation of the structures simply opens them to the possibility of further development and that it remains the responsibility of the subject to actualise every following stage of development with its accompanying structures (Piaget, 1970:712). Each stage of development is characterised by a set of schemes (mental frameworks) which are in a relative state of temporary equilibrium. Development takes place via *equilibration,* that is by alternating states of disequilibrium and equilibrium, and the latter is brought about by adaptation (Van der Zanden & Pace, 1984:166).

Adaptation is an interplay between assimilation and accommodation. *Assimilation* takes place when an individual recognises a new experience or new stimuli as similar to stored information and thus can incorporate it into an existing scheme with no or very little change. *Accommodation* takes place when the new experience or stimuli is not recognised, and existing schemes have to be modified to accommodate the new information. When equilibrium has been reached between these two processes of accommodation and assimilation, adaptation has taken place, and thus the structure has been developed. Piaget (1970:713, 714, 721) believed that the structure cannot develop beyond its biological stage of maturation, and that intervention might speed up the process of maturation within a specific stage, but not beyond it.

The schemes or schemata, which can be either biological or mental or both, are central to Piaget's theory of adaptation. Development can be seen as a progressive elaboration of these schemata by means of assimilation and accommodation - a complementary pair of processes (Thomas, 1991:148). For example, young children's physical organisation of actions (a biological scheme) which enables them to grasp a bottle can be generalised to grasping other things, like toys, and be elaborated to putting them in their mouths or throwing them away.

The mental organisation of actions, like understanding a simple mathematical or verbal concept and being able to generalise and elaborate it, forms the basis of understanding and learning of older children or adults.

Piaget considers the ability to mentally represent reality as the beginning of thought,

and the principle of conservation as fundamental to and at the centre of rational thought processes (McShane, 1991:23, 200). He uses mathematical group theory, a branch of algebra which is used for the analysis of a variety of structures and which is based on a set of laws about how elements combine, to explain the principles of thought during the concrete operational stage, and related, but more complex logico-mathematical structures as a vehicle for explanation, during the formal operational stage (Piaget, 1970:723-724; McShane, 1991:22).

The origin of knowledge, in Piaget's view (1970:704-705), lies neither in objects, nor in the organism, but in the interactions between the organism and the objects. The natural consequence of interaction is the elaboration of existing structures and the construction of new structures. Operations, that is internalised actions, which can be performed either mentally or physically are essential for cognitive development.

In contrast to some other cognitive psychologists, like Vygotsky for example who regards language as a means of facilitating the representational ability of young children, and the logical operations in later stages (Vygotsky, 1979:26), Piaget considers the relationship between language and thought as not mutually dependent. He maintains that logical operations are both deeper and genetically prior to language. In Piaget's view, logical operations form part of the system which co-ordinates all actions, thus controlling all activities, including language. He agrees that language is a symbol system that plays a major part in the internalisation of action into representations and thought, and that it is a valuable tool in the socialisation of thought, but it is not the only kind of symbol that is used in the internalisation or in the socialisation process. In the sense that language facilitates interaction, and thus the social regulation of thought through interpersonal exchange, it plays an important role in the elaboration of thought, and therefore would probably be necessary for the development of thought in the formal operational stage (Piaget, 1970:721-722; Gross, 1985:36, 218). Although Piaget made a major contribution to the understanding of cognitive development, and his theory still influences psychology (Sternberg, 1996:435), there have been sharp criticism of many aspects of his work.

4.3.1.1 Criticism of Piaget's theory

Both the validity of Piaget's research methods, as well as some of his findings and aspects of his stage theory have been criticised (Gross, 1985:191; McShane, 1991:31). The two main criticisms are probably firstly, that his theory provides a detailed description of the thought processes during various stages of development, but neglects to explain how changes in the cognitive structures occur and, secondly, that he assumes the same level of development across domains, on all tasks, and in various contexts during a specific stage (Gross, 1985:41; Sternberg, 1996:436). Children do not necessarily demonstrate stage-appropriate abilities in their performance across tasks, domains and context (Case, 1992 in Sternberg, 1996:436).

Other aspects which have been criticised are the ages at which each stage starts, and Piaget's proposition that special training does not accelerate the onset of a following stage (Van der Zanden & Pace, 1984:170). Piaget's explanation that difficulties in problem solving are due to inadequate development of inductive and deductive reasoning ability, has also been questioned. Other factors, like affective interference (McLeod, 1990:14, 15), working-memory capacity (Case, 1984:143), and verbal misunderstanding of questions can also limit children's reasoning ability (Sternberg, 1996:436).

Various researchers, known as the *Neo-Piagetian theorists*, have tested and expanded Piaget's research in a variety of ways. Some of these are the *fifth-stage theorists*, who believe that the formal-operational (fourth) stage is followed by another (fifth) stage. There are different opinions about what exactly this fifth stage might comprise. One group of researchers refers to a stage of dialectical thinking, while another group suggests a stage of post-formal thinking (Sternberg, 1996:438).

Other Neo-Piagetian theorists agree with Piaget's four stages but try to explain, rather than as Piaget does only describe, the process of cognitive development. As a possible explanation, researchers like Case and Pascual Leone postulate an *executive system* that is, a set of higher order schemes of skills that control the way in which the individual uses information, and a process of *automatisation*, which influences the individual's processing capacity (Gross, 1985:41, Sternberg, 1996:438). While these

researchers accepted some of the basic principles of Piaget's theory, the Russian psychologist, Lev Vygotsky, proposed a completely different theory of cognitive development.

Piaget's theory dominated developmental psychology during the 1960s and 1970s. In the late 1970s Vygotsky was rediscovered and his ideas took over the field for the following decade, till the end of the 1980s.

4.3.2 The cognitive-developmental theory of Lev Vygotsky (1896-1934)

The Russian psychologist, Lev Vygotsky, died of tuberculosis at the age of 38. In spite of his short life, he contributed much to developmental psychology. His two most important ideas were the explanation of learning and development through socialisation and *internalisation*, and his construct, the *zone of proximal development (ZPD)*. Although it was not one of his major contributions, Vygotsky also created an awareness of the possibilities embedded in the use of *dynamic assessment* for cognitive development (Sternberg, 1996:440-441).

4.3.2.1 Internalisation

While maturation is central to Piaget's theory, and the role of the environment is considered a secondary factor in the cognitive development of the child, contact with other people in the environment is central to Vygotsky's ideas of socialisation and internalisation. According to Vygotsky, children in their everyday lives observe and listen to the people with whom they come into contact, and then they internalise what they see and hear. Children learn and develop through contact with their environment and by recreating in themselves both the conversations and the various kinds of interaction which they come across (Sternberg, 1996:440). Unlike Piaget, who believed that children give meaning to the objects in their environment according to their internal state of maturation, Vygotsky believed children derived meaning from the external environment, by reconstructing this external environment internally that is, they internalise what they experience. That implies that the kind of environment the child is exposed to will determine what he/she internalises, and it is the internalisation process which causes development (Vygotsky, 1979:90).

In his explanation of the relation between learning and development, Vygotsky (1979:88-91) states that the learning and developmental processes do not coincide. Neither are they accomplished in equal measure, or in parallel. He further emphasises that organised learning is essential for development, because it stimulates mental processes which would not have been set in motion without formal learning. Although initial mastery provides the basis for the development of highly complex internal cognitive processes, development does not necessarily automatically follow learning. If the learner merely imitates, without internalising the experience, no development takes place. According to Vygotsky the learning process precedes the developmental process, and this sequence results in the zone of proximal development (ZPD). Learning experiences create the ZPD.

4.3.2.2 The zone of proximal development (ZPD)

Vygotsky believed that what children can do with assistance is more indicative of their mental ability than what they can do on their own, without any assistance (Vygotsky, 1979:85,86). To explain this potential ability, he based his developmental theory on the existence of a *zone of proximal development* which he described as

> "*the distance between the actual development level as determined by independent problem solving, and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers*" (Vygotsky, 1979:86).

What is meant by the actual development level is what the person has achieved already, that is, those functions which have already matured. The ZPD defines those functions which are in the process of maturing, but have not yet matured. The actual development level defines development retrospectively, while the ZPD describes mental development prospectively. What is in the ZPD at present, will be the actual development level in the near future (Vygotsky, 1979: 86, 87). In other words, what learners can do now with the assistance of an adult, or more capable peer, is an indication of their potential ability, that is, of what they will be able to do on their own in the immediate future. Vygotsky considered the ZPD as a tool through which mental development can be understood. He believed the state of an individual's mental

development can be determined by clarifying these two levels: the level of actual development, and the ZPD. By considering the maturing functions, the individual's future development can be predicted, provided that the same developmental conditions are maintained (Vygotsky, 1979:87). This implies that if a prediction regarding a learner's potential to succeed in the higher education environment is made on a regular basis under circumstances in which the learner is assisted, the prediction might not stay true once the assistance is withdrawn. If, however, the learner's actual development level has reached the stage of maturity which enables the successful performance of the cognitive tasks required in a higher education environment, the prediction will probably be valid.

The ZPD is interpreted by Sternberg (1996:441) as the range of ability between a person's observable level of ability (performance), and his latent capacity (competence). He further expands this interpretation by explaining that what children are able to do at a specific age, is what they have developed through the interaction of heredity (nature), and the environment to which they had been exposed (nurture).

In his research, Vygotsky was not so much interested in the performance level, as in the methods which children use to achieve a specific performance level; thus he was focusing on process, rather than on performance. This is the reason why his experiments were designed to enable him to study the evolvement of processes (Cole & Scribner, in Vygotsky, 1979:12, 13) and why he was more interested in the processes involved in assessment than in the results of assessment.

4.3.2.3 Vygotsky's notion of dynamic assessment

Another important contribution by Vygotsky is his questioning of static assessment methods as a way of determining the range within which education should take place (Vygotsky, 1979:89). He opposed the idea that education should not exceed the upper range of children's performance level on static tests. Vygotsky proposed that different conclusions should be drawn from diagnostic tests of development, that is, that attention should be given to the incorrect responses of children, rather than to their correct answers. Vygotsky not only proposed new ways of looking at a person's level of development, but he also realised the need for a different approach to the measuring

of an individual's ability. He developed the ZPD as an alternative to static individual testing (Moll, 1992:3). In this way he paved the way for the concept of dynamic assessment, a concept which was further explored by several researchers in relation to learning potential and cognitive modifiability (Das, 1987; Feuerstein, Rand, Jensen, Kaniel & Tzuriel, 1987; Lidz, 1987; Haywood & Tzuriel, 1992).

To proceed with different theories of cognitive development, the last of these to be discussed are the approaches of various information processing theorists.

4.3.3 Theories of information processing

Information processing theories of cognitive development seek to understand how people at various ages process information, that is, how they decode, encode, transfer, combine, store and retrieve information from the environment, especially when they are solving mental problems. Researchers who study cognitive development from an information processing perspective investigate changes in the processes and strategies, employed by people at different stages of their lives, as well as their ways of representing and organising information (Sternberg, 1996:442,443).

The information processing approach to the study of human cognition developed only in the second half of the twentieth century, but it had some of it roots as early as the late nineteenth century in the work of Wilhelm Wundt and William James (Allport, 1980:26; Reynolds & Flagg, 1983:31-32). After decades of domination by behaviourism in America, interest in the higher mental processes was revived in the late 1940s by research in disciplines other than psychology.

The two new fields which most influenced psychologists were computer science and information theory (the mathematical theory of communication). Information theory appeared to offer the possibility of measuring psychological capacity in a scientific way, while the analogy between the computer and mental computation by humans formed the basis of various models of mental processing. The terminology used in both these fields also provided suitable concepts to describe mental processes (Allport, 1980:27; Reynolds & Flagg, 1983:10,11).

Since both people and computers process, store and retrieve information, many researchers' work on thinking processes during the 1950s and 1960s, was done by computer simulation. One of the first models of the mind that described the flow of information through the organism, was a flowchart which consisted of structures as well as processes, proposed by Donald Broadbent in 1958. However, there was also some opposition to the use of computer simulation because of the rigidity of these models as well as the fact that they could not accommodate the emotional side which accompanies human information processing. Nevertheless, the influence of theories of computation can be found in the majority of developmental research after 1960 and concepts like memory buffers, encoding, search and retrieval are standard components of modern theories of cognition (Dellarosa, 1990:15).

By the late 1960s the influence of a new development in computer science, Artificial Intelligence (AI), started to change the focus of theories of cognitive development, from a concern with the amount of processing, to detail about the contents of information processing (see 4.4.2.9) (Allport, 1980:29,31,52; Evans, 1980:278). The early theories described various stages of information processing, namely sensory input (attention and perception), encoding (representation), transformation (short-term and working memory), storage (long-term memory), and retrieval (Eysenck, 1994:2-3, 100-101). Most researchers concentrated on processes within certain stages of the process, and not on the entire process. In spite of the volume of research, there is not only one comprehensive theory of information processing, but various loosely related theories, which have been constructed within the information processing framework. These theories address two central issues. The first of these is *what* is information processing, and these researchers investigate the system itself, especially its organisation and basic processes. The other issue has to do with *how* the information processing system operates during the execution of various tasks, such as reasoning or reading, for example (McShane, 1991:10,11).

The two main approaches followed by researchers who study information processing are either primarily domain-general, or primarily domain-specific (Sternberg, 1996:443). The term *domain* in this context denotes a collection of tasks that share a common representation system, as well as a common set of procedures to operate on

these presentations to perform tasks; for example, language, numbers and music are three different domains. Domains may overlap, either in the use of similar representations or symbols, or by using similar procedures (McShane, 1991:318).

4.3.3.1 Domain-general information processing research

Researchers who follow a domain general-approach, try to describe how general principles of information processing are applied across various different cognitive functions. Most of these theories deal with changes in encoding, self-monitoring and the use of feedback, which are brought about by the development of the individual. The nature of the changes is established by an analysis of how these processes are used by various people in different age groups (Sternberg, 1996:443).

In order to extract, integrate and use information, the cognitive system must have some way of representing this information. The representation is created by selecting information from the environment, and the subsequent encoding of this selected information (McShane, 1991:17). In the process of cognitive development, a part of what develops is the ability to both select and encode more information from the environment, and combine and integrate it with existing knowledge, thus constructing more complex representations from the same stimuli (Das, 1994:54). Domain-general theorists study the development of this ability, and thus how the individual's representation changes over time. Other aspects that are studied are individual differences in processing resources, like attention and working memory.

The domain-general principles which relate to self-monitoring and feedback, form part of the research on metacognition, and will be discussed in more detail in a later section (see 4.3.3.3). The other approach to research on information processing deals with specific domains.

4.3.3.2 Domain-specific information processing research

In addition to the few domain general principles which govern information processing in all domains, there seem to be separate principles which underlie specific cognitive processes, and which are not the same across domains. Researchers who study these

processes investigate domain-specific information processing. When the cognitive processes involved are different from one domain to the other, but similar across tasks within a specific domain, reference is made to *modular theories* of cognition. An example of this is Chomsky's theory about language acquisition (McShane, 1991:12). Researchers who develop these theories engage in detailed analyses of the processes involved in performing various tasks within a specific domain, in order to establish what the cognitive system must be able to do to enable the effective performance of these tasks.

A significant development in information processing research was brought about during the 1970s by the identification of control processes, which govern other cognitive processes. These control processes were referred to as *metacognition* (Flavell, 1976:232 in MacDonald, 1990:22,24). In the following discussion these control processes will be explained. This will then be followed by a discussion of two specific kinds of information processing, namely reasoning and problem solving. These two examples of cognitive processing have been selected for discussion to illustrate the importance of metacognition, and because of their specific relevance to success in higher education.

4.3.3.3 Metacognition

A broad definition of metacognition is 'knowledge about knowledge and cognition' (Flavell, 1987:21). In most cases, however, when the term metacognition is used it refers to the individual's engagement in self-monitoring of his/her thought processes, while focusing on a specific task or goal. To facilitate the understanding of the concept, Flavell (1987:22,23) classified a part of the domain of metacognition. The key concepts which he identified are metacognitive knowledge, which refers to a person's acquired knowledge about cognitive matters, and metacognitive experiences, that is those feelings which prompt a person to re-evaluate the strategies used to perform cognitive tasks.

With regard to metacognitive knowledge, Flavell distinguished three further categories. The first one of these categories, is knowledge about *person* variables, that is, knowledge about oneself, and about others as processors of information. The

second category, knowledge of *task* variables, deals with the person's acquired knowledge about specific cognitive tasks or problems. The last category, knowledge about *strategy* variables, refers to the various suitable strategies to perform a task, which the person knows about, and can choose from. Person, task and strategy variables always interact, therefore a person gradually learns which strategies work best for him/her in the performance of a specific task.

A further explanation of metacognition, is that it is second-order cognition (Weinert & Kluwe, 1987:8). This implies that if cognitive processes could be considered level-one cognitions, then metacognitive processes will be considered, level-two cognitions. For example, using the strategy of adding a few numbers to get the sum of these numbers, is a straight-forward strategy to perform a task, which would be considered a first level cognitive process. If the person should, however, start to wonder whether simply adding the numbers is the best way to get to the answer, and consider other possible strategies, the person employs second level, thus metacognitive, processes.

This idea of different levels of processes, has also been explored by other researchers, as, for example, Strohm Kitchener (1983:225-227), who suggested a three-level model of cognitive processing. She describes second-level metacognitive processes as processes which monitor cognitive tasks. In order to do this, different kinds of knowledge are involved, namely knowledge about cognitive tasks, about particular strategies, about when and how these strategies should be applied, and about the success or failure of any of these strategies. She further argues that these metacognitive processes are sufficient to use for processing puzzle-like problems with definite solutions, but not for ill-structured problems. To solve ill-structured problems, which are the kind of problems we usually have to deal with in our daily lives, a person also needs to know whether a problem is solvable. To be able to assess the nature of a problem, and to define the limits of any strategy that might be employed in an attempt to solve the problem, one also needs a meta-meta level of cognitive processes. Strohm Kitchener refers to these third-level processes, as *epistemic cognition*. At this level a person needs knowledge about the limits of knowing, the certainty of knowing, and the criteria for knowing. She emphasises the need for epistemic cognitive processes, in combination with metacognitive processes, in order to consider, and possibly solve, ill-

structured problems effectively.

Three other researchers who contributed significantly during the late 1970s and early 1980s to the understanding of metacognitive processes, by explaining information processing components, are Carroll, Brown, and Robert Sternberg (Sternberg, 1990:268,269; 1992:119-123). Carroll identified ten types of cognitive component. These are: monitor (determining tendency), attention, apprehension (registering a stimulus in a sensory buffer), perceptual integration, encoding, comparison, corepresentation-formation, corepresentation retrieval, transformation, and response execution. Carroll considered these ten components as adequate to serve as the basis for an information processing analysis of intelligent task performance (Sternberg, 1990:268).

Brown distinguished two kinds of processes of cognition, namely metacognitive processes, that is, executive skills which control a person's information processing, and cognitive processes, which are non-cognitive skills, used to implement task strategies. The five metacognitive processes which Brown considers important in deciding which cognitive processes are appropriate to use in the performance of a task are: *planning* each next move in executing a strategy, *monitoring* the effectiveness of each step, *testing* the strategy while executing it, *revising* the strategy as needed, and *evaluating* the strategy to determine how effective it is (Sternberg, 1990:268, 269).

The theory of Sternberg involves three kinds of information processing component, namely metacomponents, performance components, and knowledge-acquisition components (Sternberg, 1984:165-167; 1985:xii, 105-107; 1990:268). The *meta-components* are higher order control processes and are used to plan, monitor and evaluate on an executive level how one performs on a task. The eight most important metacomponents are: recognising that a problem exists, as well as the nature of the problem, selecting a set of lower order non-executive components for the execution of the task, as well as a strategy in which to combine these lower order components, selecting one or more mental representations, deciding how to allocate attentional resources, monitoring progress on task performance, and understanding internal as well as external feedback.

The second kind of component in Sternberg's theory, is *performance components*. These are lower-order processes, and are used to execute various strategies while a task is performed. The performance components include: *encoding* the nature of the stimulus, *inferring* relationships between internal and external stimuli, and *applying* a previously inferred relation to a new situation.

The last kind of component, *knowledge-acquisition components*, includes: *selective encoding*, in which relevant and irrelevant information is identified, *selective combination*, combining selectively encoded information to maximise internal coherence, and *selective comparison*, by which the selectively encoded and selectively combined new information is compared with existing information. In this way the newly formed knowledge structure is connected with existing knowledge structures. Different components are applied to different tasks, with metacomponents having application over the widest range of tasks (Sternberg, 1985:105-107).

The above theories all contributed to a better understanding of both information processing and the various levels of cognitive processes. From the discussion it also became clear that metacognitive skills are key thinking skills (Pogrow, 1992:94), and that they are essential for reasoning, as well as for problem solving.

4.3.3.4 Reasoning

Reasoning can broadly be described as the process of drawing conclusions from principles and from evidence, with the purpose of using existing knowledge to infer a new conclusion, or to evaluate a proposed conclusion (Sternberg, 1996:397). There are various kinds of contextual reasoning, inter alia, clinical reasoning in a medical situation, mathematical reasoning, and analytical reasoning. All of these are, however, sub-categories of the two overarching types of reasoning, namely *deductive* and *inductive* reasoning.

a) Deductive reasoning

This kind of reasoning refers to the process of reasoning from the general to the specific. It involves using one or more general statements of what is known, to reach a

logically certain conclusion. Deductive reasoning is based on logical propositions, and during the process one deals with the information and premises which are stated either implicitly or explicitly in the general statements. Deductive reasoning usually has to do with a specific application of the general statement(s) (Nickerson, Perkins & Smith, 1985:10; Sternberg, 1990:294; 1996:397-398).

There are different types of deductive reasoning. One of the primary types is *conditional reasoning*, that is, conclusions are based on an *if-then* proposition. Another kind of deductive reasoning is *syllogistic reasoning*. This implies using deductive arguments that draw conclusions from two premises (syllogisms). A premise is a statement about which an argument is made, and syllogistic reasoning makes use of a major premise as well as of a minor premise to draw a conclusion (Sternberg, 1996:403).

Errors that occur in deductive reasoning relate to the content of the premises, and the credibility of the conclusion (Sternberg, 1996:412). Regarding the premises, assumptions may be made which are neither implicit nor explicit in the statements, or the premises can be untrue, thus leading to an invalid conclusion. Another common error is the misunderstanding of negative statements, which causes a misrepresentation of the given information (Nickerson et al., 1985:115-117). It seems that in complex deductive reasoning it might also be necessary to employ epistemic cognition in order to be able to distinguish between the truth or validity of the given information. Besides deductive reasoning there is also another type of reasoning, namely inductive reasoning which again includes several sub-types of reasoning.

b) Inductive reasoning

In contrast to deductive reasoning, where it is possible to reach certain logically deducted, valid conclusions, this is not possible in inductive reasoning. Inductive reasoning is reasoning from the specific to the general. It is based on specific facts or observations, from which we then make general probable conclusions to explain the facts (Sternberg, 1996:414). Inductive reasoning goes beyond the information given with the purpose of discovering underlying rules and principles. It is the reasoning procedure used in scientific research which enables the use of sampling, instead of

investigating a whole population.

The kinds of inference that can be made in inductive reasoning are causal and categorical. There is, however, also a third kind of inductive reasoning, namely reasoning by analogy. By causal inferences is meant that one event causes another. Categorical inference implies the categorising of observations or facts according to the corresponding rules that govern them or due to the similarity in their underlying principles. Inductive reasoning by analogy involves transferring the relations present in one situation to another situation in order to, for example, infer what the nature of missing components in the second situation could be (Nickerson et al., 1985:10-11; Sternberg, 1996:417-418).

Some of the most common errors in inductive reasoning are the over-generalisation of findings, and the assumption that two events, which seem always to happen together, must be related. One of the skills used in inductive reasoning, namely the ability to perceive second-order relationships, was associated with a person's level of intelligence by Spearman. Sternberg confirms this relationships with later research, which identified the three critical components in inductive reasoning ability as inference, mapping (figuring out the higher order relations between, for example, two statements as parts of an analogy), and application (Sternberg, 1990:289-290).

The last cognitive process to be discussed in relation to information processing, is problem solving.

4.3.3.5 Problem solving

In the psychological literature the term problem solving is used to refer to the thought processes and behaviour which accompanies the performance of an intellectually demanding task (Nickerson et al., 1985:65). A person engages in problem solving when there is an obstacle to achieving a goal or to answering a question. Answers that can be retrieved directly from memory and previous experience do not pose a problem. Problem solving is part of our daily lives, but it is also an integral part of learning at all levels and thus also an activity which students should be able to perform well in order to succeed in the higher education environment. To improve students' ability to solve

problems, it is necessary to enable them to perform well those cognitive tasks involved in the process of problem solving. Several researchers, inter alia, Polya (1957), Newell and Simon (1972), Hayes (1981), (in Nickerson et al., 1985:75, 79-81, 303) and Sternberg (1996:347) have studied and described the process of problem solving as a number of activities which are performed in sequence.

Sternberg (1996:347-349) identified seven steps in the problem solving cycle. These are firstly, *problem identification*, that is, recognising that there is a problem, and secondly, *problem definition and representation* which means establishing exactly what the problem is and then representing it in a specific way. This is a crucial step, because it not only determines which problem is going to be solved, but also suggests the strategies that could be used to solve the specific problem. The third step in the cycle is *strategy formulation*. This step can involve, for example, either analysis or synthesis, or both, and/or divergent or convergent thinking. There is no single ideal strategy to solve a specific problem. How effective a strategy will be as a means of solving the problem depends on the situation, as well as on the problem solver's knowledge, abilities and experience. The fourth step is to *organise the available information* in such a way that it is possible to implement the strategy. The second-last step in the problem-solving cycle is *monitoring* the process. This involves checking one's progress continuously, that is, looking closely at the result of what one is doing and adapting or changing the strategy if and when it becomes evident that there is a more effective way of performing the task at hand. The final step is to *evaluate* the result, as well as the whole process. Evaluating the result is as important as monitoring one's progress. At the end of the process one must assess whether the problem has been resolved satisfactorily in relation to one's goal, and what the quality of the solution is. The evaluation of the result might also lead to the identification of a further problem.

During these last two steps in the process, the actual learning and the mental development of the individual take place (Candy, 1991:356). Self-monitoring is also one of the essential characteristics of a self-directed, lifelong learner (Pintrich, 1995:7). These two activities, monitoring and evaluation, cannot be performed in a mechanistic way, according to some recipe, but depend on the individual's knowledge, experience

and assessment ability. Therefore it is important that students should get exposure to various kinds of problems, and be actively involved in the whole process of solving these problems, so that they can develop the necessary problem-solving skills, as well as learn to differentiate between worthwhile and mediocre solutions.

All problems can be categorised into two broad categories, namely well-structured or well-defined problems and ill-structured, or ill-defined problems (Sternberg, 1996:350).

a) Well-structured problems

Well-structured problems have definite solution paths, and with this kind of problem, the problem solver can change the initial state into the final state of the problem, by following certain steps. Problem solvers often apply one or more of four kinds of heuristics to solve a well-structured problem, (Davidson, Deuser & Sternberg, 1994:216,217). These are, firstly, means-end analysis, in which one tries to decrease the distance between the present and the ideal situation. The second and third heuristics are opposites, namely working forward, and working backward. In the first case, one starts at the present state and systematically works toward the goal state, while working backward involves starting at the goal state and working back to the initial state. The fourth heuristic is generate and test, during which the problem solver generates alternative paths to the solution and evaluates how effective each one will be in solving the problem. Heuristics are applied in a problem space, that is, all the possible actions that can be taken to solve a problem.

b) Ill-structured problems

In contrast to well-structured problems, ill-structured problems have no clear pathway to a single, definite solution, and in some cases there might not even be a solution to the problem (Strohm Kitchener, 1983:224). This kind of problem often requires that one changes one's initial representation of the problem, before it can be solved. Solving ill-structured problems often relies on insight, which brings about reconceptualising the problem, or a strategy, or combining old and new information to understand the problem or its required solution in a novel way. Although insight is

considered a sudden understanding of a problem or of a strategy which can facilitate solving a problem, it is often the result of much prior thought and hard work (Sternberg, 1996:359).

c) Hindrances to problem solving

Apart from the misrepresentation of problems, there are also other factors which hinder problem solving. One of these has to do with the available information, namely more novelty, which could take several forms, inter alia, new rules, new operations, new knowledge, or new objects. Another hindrance has to do with the rules, namely more rules or more complex rules, or counterintuitive rules, which seem not to be in line with what the problem solver knows, or what seems logical when one uses common sense (Kovotsky, Hayes & Simon, 1985 in Sternberg, 1996:364).

Other hindrances are a preconceived idea about a problem, regarding its representation or its context, or about the strategy or procedure that should be used to solve the problem. This is referred to as an *entrenched mental set* (Sternberg, 1996: 364-366). If a person approaches a problem with an entrenched mental set, he/she fixates on a strategy which is usually used to solve similar problems, but which is not appropriate to use in solving the specific problem. Apart from the fixation on a certain strategy, the solution can also be prevented by *functional fixedness*, which is the inability of the problem solver to recognise another function for an object, which is different from its usual function. Another kind of mental set is the classification of people into set categories, or stereotypes, and not being able to treat a person as an individual with unique characteristics.

The fact that students often bring from school incorrect tacit rules which they use to solve mathematical problems (Craig & Winter, 1990:66) is a typical example of a mental set which would be a hindrance to problem solving in higher education. On the other hand, the use of tacit knowledge in expert problem solving is one of the big differences between the problem solving abilities of experts and novices.

d) Novice and expert problem solving

The study of experts and novices during problem solving has revealed that there are distinct differences in the way experts and novices act at various stages of the problem solving cycle. Experts are not only more effective problem solvers, but their performance is also of a better quality (Nickerson et al., 1985:68). For example, experts are more adept at identifying the real problem and representing it in such a way as to ensure an optimal solution. Experts also devote more time to the mental representation of the problem than novices, and less time to the actual implementation of the strategy to resolve the problem (Sternberg, 1996:373). Furthermore, experts allocate more mental resources to global planning, while novices spend more time on local (detail-oriented) planning.

One of the important differences between experts and novices is that experts have more knowledge and better organised knowledge than novices. Experts have schemas which contain a great deal more procedural knowledge about problem strategies relevant to the domain, and the schemas of experts involve large highly-interconnected units of knowledge, which are organised according to underlying similarities among various units of knowledge. Novices, on the other hand, have schemas with relatively small and disconnected units, which are organised according to superficial similarities. The schemas of novices also contain limited procedural knowledge about problem solving strategies relevant to the domain. Due to their experience in applying strategies, experts probably use less working memory, because of the automatisation of parts of processes, and the chunking of information, therefore they have the capacity to better monitor their progress and the accuracy with which they are solving problems (Sternberg, 1996:373-375).

The problem with the studying of expert performance, is that some of the most important aspects of the expert's performance might not be visible (Nickerson et al., 1985:69). The same problem is experienced in the classroom when the student only hears and sees the product of the lecturer's reasoning, while the lecturer is explaining or demonstrating how to solve a problem. Thus the actual expert reasoning behind the overt performance of the lecturer, which could possibly have contributed more to the student's mental development, is not explained.

To identify effective problem-solving strategies, cognitive psychologists have not only studied the performance of experts, but also used computers to demonstrate intelligent cognitive performance. This will be discussed further when Artificial Intelligence (AI) is explained (see 4.4.2.9).

The three main influences on the study of cognitive development, namely the theories of Piaget, Vygotsky and the information processing theorists, leave us with a few general principles of cognitive development which Sternberg (1996:453) summarises as follows: The first is that as a person grows older and develops, more complex interactions between thought and behaviour become possible, because of the increased and more sophisticated control the individual has over his/her thinking and learning. Secondly, older children or adults tend to engage in more thorough information processing. The higher the level of development, and the more knowledge about a topic a person possesses, the more information is encoded from a problem and therefore the problem is more likely to be solved accurately. Thirdly, it becomes possible to understand and manipulate more complex relationships, and lastly, greater flexibility in the use of strategies and of information in various contexts is developed over time.

The further discussion is divided into three main parts. These are firstly, intelligence and its measurement, secondly, the effect of non-intellective factors on development and on academic performance, and thirdly, the influence of the environment on student motivation and quality of effort.

4.4 Intelligence

Intelligence is a construct which has been investigated from a wide variety of perspectives, and in various contexts. In the following discussion some of these perspectives, as well as the development of several theories of intelligence, will be explained.

4.4.1 Definitions of intelligence

There is no universally agreed upon definition of intelligence. However, two themes

seem to be essential in the description of intelligence, namely the capacity to learn from experience, and the ability to adapt to the surrounding environment. These two themes were central to the definitions given by 14 famous psychologists in 1921, and again by 24 cognitive psychologists, specialising in intelligence, in 1986 (Sternberg & Detterman, 1986 in Sternberg, 1996:459). The 1986 group added another dimension, namely the importance of metacognition, that is, a person's understanding and control of his own thinking processes. A further awareness of the differences in both the interpretation, and of what is considered intelligent behaviour in different cultures, further expanded the definition of intelligence, to also include the cultural context in which an individual functions daily (Goodnow, 1990:262).

A contemporary definition of intelligence, as suggested by Sternberg (1996:460), and including the four most important aspects mentioned above, could then be:

> *Intelligence is the capacity to learn from experience, using metacognitive processes to enhance learning, and the ability to adapt to the surrounding environment, which may require different adaptations within different social and cultural contexts.*

Apart from this formal definition of intelligence, people within the same community may interpret the meaning of intelligence differently, in different circumstances. For example, what employees would consider intelligent behaviour by a manager of a large organisation, would differ from what would be considered intelligent behaviour as a minister of a church congregation. Just as being an intelligent accountant is different from being an intelligent carpenter, or an intelligent musician. Furthermore, each person might also have his/her own idea of what it means to behave intelligently. These *implicit theories* of intelligence (Sternberg, 1986:53, 54) also take context into account, and this is an important factor in cognitive research in different cultural settings. Apart from the variety of implicit theories, there are also a variety of *explicit theories* of intelligence, that is, theories based on empirical research, but explaining the phenomenon from different points of view. In some cases reference is made to different *types* of intelligence.

4.4.2 Different views of intelligence

One of the debates about the nature of intelligence, which started soon after the concept of intelligence was first introduced, was whether intelligence should be considered a general cognitive ability, or a collection of special abilities (Nickerson, Perkins & Smith, 1985:15). How these opposing interpretations were supported by some and questioned by others, will become clear in the following brief discussion of some of the more common views of intelligence. The complexity of its nature and the consequent difficulties in measuring intelligence, will also be evident from the discussion.

4.4.2.1 Spearman's model of general intelligence ("g")

The symbol "g" is the product of a psychometric approach to intelligence, which an English psychologist., Charles E. Spearman (1863-1945) identified during the 1920s to signify general ability (Van der Zanden & Pace, 1984:106). This general ability was considered to be involved in the performance of most of the types of task which were used to assess intelligence. The idea of intelligence as a general ability which was used in a wide variety of contexts, was also supported by other researchers like Spencer and Galton (Nickerson et al., 1985:15; Blagg, 1991:3). To account for the intercorrelations of "mental" tests, Spearman hypothesised the existence of a single factor common to all tests involving complex mental processes. He called the common factor 'general intelligence' or simply "*g*" (Lawler, 1978:62). Apart from this single factor "*g*", Spearman also identified other specific factors "s", but he considered these as of minor importance (Sternberg, 1996:466). A further interpretation of "*g*", is that it is an underlying ability which the individual has for abstract reasoning and for learning in various contexts.

The evidence that was given in favour of "*g*" and thus of general intelligence, was the appearance of a general factor during factor analyses of intelligence tests. This evidence was questioned by later researchers (Sternberg & Gardner, 1983 in Sternberg, 1985:119), who criticised not only the validity of the conclusions, but also the claim that the result of the factor analysis can be considered a psychological outcome. As evidence against the existence of general intelligence, Sternberg

(1985:119) states that some rotations of factors fail to yield a general factor.

There were also other reasons why the validity of *"g"* was questioned. For example, Walters and Gardner (1986:177,178) did not deny that *"g"* exists, but had serious doubt about its explanatory value outside the relatively narrow environment of formal schooling. They argued that the evidence for "*g*" is provided almost entirely by tests of linguistic or logical intelligence, and that these tests also rely on short answers. They were concerned about the fact that this measure of intelligence, even if it should be considered a valid concept for describing the capacities of certain individuals, would fail to identify many others who have other kinds of specific, outstanding talents. They therefore did not accept *"g"* as an unbiased and productive way to either identify or describe intelligence.

During the 1930s and 1940s Spearman's factor analysis procedures were refined and elaborated by Louis Thurstone (1887-1955).

4.4.2.2 Thurstone's model of primary mental abilities

Although Thurstone also used factor analysis for his explanation of intelligence, he rejected a single factor as the core of intelligence. Instead, he proposed seven factors, which he considered the primary mental abilities. These were verbal comprehension, verbal fluency, spatial visualisation, numerical ability, associative memory, and perceptual speed. Thurstone described an individual's ability by means of a profile of the different scores on each of these seven mental abilities (Van der Zanden & Pace, 1984:106; Blagg, 1991:3; Sternberg, 1996:466).

As a complete opposite to the one-factor model of Spearman, J.P. Guilford has developed a multi-dimensional model of intelligence in which he proposed 120 separate types of mental abilities (Van der Zanden & Pace, 1984:106).

4.4.2.3 Guilford's structure of intellect model

Guilford distinguished three different dimensions of intelligence factors, namely operations, products and contents. He considered operations as mental processes, and

included five processes in this dimension, namely cognition, memory, divergent production (generation of logical alternatives), convergent productions (generation of logic-tight conclusions), and evaluation. Guilford's second dimension, contents, refers to four areas in which mental operations are performed, namely figural, symbolic, semantic, and behavioural. The last dimension, products, refers to the kind of responses required during assessment. These included units (single words, numbers or pictures), classes (hierarchies), relations, systems, transformations, and implications. The contribution of this model is that it created an awareness of the need to consider various kinds of mental operations, contents and products, when assessing intelligence (Van der Zanden & Pace, 1984:106,107; Sternberg, 1996:468,469). Less complicated models of intelligence were those of Cattell and of Vernon.

4.4.2.4 The hierarchical models of Cattell and Vernon

Both of these researchers proposed models which distinguished between two major subfactors of intelligence. The hierarchical model of Philip E. Vernon (1971) proposed practical-mechanical, and verbal-educational subfactors of intelligence. A similar division was made by Raymond B. Cattell, also in 1971, but described differently. Cattell's model (1971) makes a distinction between *crystallised* and *fluid* intelligence. He explains *fluid intelligence* as the capacity for new conceptual learning, abstract reasoning and problem solving - a general 'brightness' and adaptability, relatively independent of education and cultural experience. *Crystallised intelligence*, on the other hand, is accumulated knowledge, that is, knowledge gained through all kinds of experience, including formal schooling, and consisting of acquired knowledge and developed intellectual skills (Lawler, 1978:70,71).

4.4.2.5 Gardner's theory of multiple intelligences

In his theory of multiple intelligences, Howard Gardner (1983) considers intelligence not as a single unitary construct, but as a set of abilities, talents, or mental skills (Gardner, 1986:165). Like Thurstone, but different in content, he also distinguishes seven "intelligences". These are linguistic, logical-mathematical, spatial, musical, bodily-kinaesthetic, interpersonal, and intrapersonal intelligence. Gardner believes that each individual possesses each of these skills to a certain extent, but because of innate

endowment and due to specific training, the profile of skills and their combination differs. He also considers these multiple human faculties, the intelligences, as independent of one another. He further emphasises the role of the surrounding culture in the extent to which a person's innate potential will be realised. According to Gardner (1986:181), anyone who is not brain damaged can achieve quite significantly on any one of the intelligences, when sufficiently exposed to it. But he also expresses the conviction, that nobody, whatever his/her biological potential, would develop an intelligence, if he/she is not sufficiently exposed to the materials that develop a particular intellectual strength.

Gardner has a modular view of the mind. That implies that different abilities can be isolated and that they emanate from different areas of the brain. The scientific proof of the location of these abilities in the brain is not sufficient to accept this theory as an absolute fact (Sternberg, 1996:479). The next view of intelligence is often overlooked, because it deals with the everyday life of the individual, which has traditionally probably been considered too mundane to be associated with such an academic construct as intelligence.

4.4.2.6 Practical intelligence

Practical intelligence may be thought of as what is reflected in one's cognitive responses to almost everything outside the school, that is, the problem situations that arise naturally as one goes about one's daily life (Frederiksen, 1986:84).

There is also a different aspect of practical intelligence, which relates to a person's work life. A key element of practical intelligence in occupational settings is the ability to learn, and then apply information that is never explicitly taught to a worker, but that is essential for success in their jobs - also referred to as *tacit knowledge*. Sternberg (1986:2, 3) discerns three categories of tacit knowledge, and two orientations towards it. The categories deal with knowledge about the management of self, of others and of the job, and the orientations are local (short term) or global (long term). This view of intelligence is also included as one of the three abilities in Sternberg's triarchic theory.

4.4.2.7 Sternberg's triarchic theory of intelligence.

This is an integrated theory of intelligence, in the sense that Sternberg emphasises how the different aspects of intelligence work together. With his triarchic theory, Sternberg identifies three aspects with which he associates intelligence, namely a person's internal world, external world, and experience. The purpose of this theory is to specify the loci of intelligence, and to explain how these loci cause intelligent behaviour (Sternberg, 1985:317). In other words, it also explains some of the possible reasons for individual differences. The triarchical theory of human intelligence grew out of Sternberg's componential theory and consists of three sub-theories (Sternberg, 1985:xii). These are firstly, a componential sub-theory, dealing with the internal world of the individual, secondly, an experiential sub-theory, relating intelligence to the experience of the individual, and thirdly, a contextual sub-theory explaining how intelligence relates to both the internal and external worlds of the individual.

The relation of intelligence to a person 's *internal world* deals with the processing of information and with the question of *how* intelligent behaviour is generated. This aspect of the theory describes the potential set of mechanisms which forms the basis of intelligent behaviour. Although there might be differences in the way different people apply these mechanisms, the potential set of mental mechanisms is considered to be the same for all individuals and across various social and cultural environments (Sternberg, 1985:xii, xiii). This potential set consists of three types of interdependent component that are used by the individual for the processing of information. As already explained during the discussion of metacognition (see 4.4.3.3), these components are metacomponents, performance components, and knowledge acquisition components.

As the second aspect in his triarchic theory, Sternberg considers the interaction between a person's *experience* and these information processing components. This aspect explains *when* behaviour is to be considered intelligent (Sternberg, 1985:xii). He describes a continuum of experience by distinguishing between its extremes as encountering a completely novel task, and a task that is so familiar that some of its aspects might have become automatic, that is, requiring little conscious effort in planning its execution (Sternberg, 1996:480). All tasks and situations which the individual faces lie somewhere along this continuum. The exact position of the task on

the continuum differs among individuals. That implies that a specific task cannot simply be classified as representative of intelligence, because the individual's experience regarding the task determines the assessment of the individual's level of performance on that task. According to Sternberg (1996:480), a novel task requires more of a person's intelligence, than a familiar task. This aspect of the triarchic theory should be taken into consideration not only during the construction of intelligence tests, it is also particularly relevant to the assessment of all students at various stages of their progression through higher education.

The last locus of intelligence in the triarchic theory relates to the *external* world. This aspect of the theory deals with *what* behaviours are intelligent and *where* they are considered to be intelligent. This aspect of the theory explains the relativistic nature of intelligence. It is proposed that the individuals use both the three kinds of component and their experience to deal with three important aspects in the external, real-world context, namely adapting to the existing environment, shaping the existing environment to create a new environment, and selecting a new environment. What may be required from an individual to adapt, to reshape, or to select an environment may differ across persons and groups, and across environments. This implies that the meaning of intelligence may differ between individuals and groups, but also within individuals and groups at different times and in different situations (Sternberg, 1985:45-47). This third aspect of the triarchic theory emphasises the need for cultural considerations in the assessment of intelligence. It also relates to the cognitive side of one of the prerequisites for integration into the higher education environment, namely adaptation (see 2.5.2).

In recent years, Sternberg further extended the meaning of his triarchic theory to describe three different types of intelligence, namely analytic, practical and creative intelligence. This relates to the nature of the problems which a person solves more intelligently. He emphasises that a person who is considered intelligent usually does not excel on all aspects of intelligence, but rather is someone who knows his/her strengths and weaknesses, and deals with this knowledge wisely (Sternberg, 1996:480).

The different perspectives of intelligence dealt with in this section up to now have emphasised the cognitive side of intelligence. For the sake of comprehensiveness a different view of intelligence is mentioned here, namely emotional intelligence.

4.4.2.8 Emotional intelligence

In his description of emotional intelligence Goleman draws heavily on Gardner's theory of multiple intelligences (see 4.4.2.5) He refers to five domains to define emotional intelligence. These domains are: knowing one's emotions (self-awareness), managing emotions, motivating oneself, recognising emotions in others (empathy), and handling relationships (Goleman, 1995:43).

The debate about whether to include affective and conative factors within studies of intelligence, is not new. Most researchers dealing with various aspects of cognitive development and intelligence recognise the influence of these non-intellective factors on academic performance, and are fully aware of the reciprocal nature of cognitive and affective functioning, but still prefer to separate the cognitive and affective domains for research purposes (Sternberg, 1990:4). In this study, preference is also given to dealing with non-intellective factors separately, and therefore these factors will be described in more detail, and with more scientific evidence, in a further section of this chapter (see 4.5).

As a complete opposite to emotional intelligence, one finds artificial intelligence (AI). This is not a specific view of intelligence, in the same sense as the different theories which had been discussed thus far, but rather an attempt to create systems that process information intelligently.

4.4.2.9 Artificial Intelligence (AI)

Digital computers influenced the study of cognitive psychology both indirectly and directly. Knowledge about how computers process information were used to explain models of human information processing, and since the 1950s researchers have attempted to program machines to handle cognitive tasks (Sternberg 1996:468). This branch of research is called Artificial Intelligence (AI).

The first test to assess the intelligence of a computer was devised by Turing in 1963 and was based on some of his previous research conducted during the 1950s. The main focus of early AI programmes was problem solving. Reaction time was monitored, not to see whether computers can solve problems faster than humans, but to compare the relative speed with which computers and humans solve various kinds of problem. According to Sternberg (1996:482-487) AI has developed from purely simulating human intelligence, through programmes which exceed human intelligence, to expert systems - that is, a computer program which can perform the way an expert does in a specific domain. Although several researchers challenged the claim that machines can act intelligently, the contribution of AI to the understanding of human information processing cannot be denied. Another completely different application of computers in cognitive research is for the processing of data related to the measurement of intelligence.

4.4.3 The measurement of intelligence

Almost all the different views of intelligence, which were discussed earlier (see 4.4), were accompanied by a specific method to measure intelligence. The purpose of this section is not to explain those methods, but rather to offer arguments for and against the use of the most traditional measure of intelligence, namely intelligence quotient (IQ). IQ is a ratio of mental age, divided by chronological age and multiplied by 100. This measure of the individual's intelligence has been used since the early 1900s (Sternberg, 1996:461).

4.4.3.1 Arguments in favour of IQ

The construction of intelligence tests is such that they do not measure natural ability, but rather what academic knowledge a person has accumulated (Van der Zanden & Pace, 1984:109). Since a certain level of academic preparation is necessary for students to succeed in the higher education environment, these tests can be used to indicate whether or not a student has had adequate academic preparation to be successful. However, it is important to remember that insufficient preparation at a certain stage does not imply that a student does not have the potential to succeed, should his/her level of academic preparation be improved. But, if IQ scores can

indicate a student's present level of competence, they do have some value in the higher education environment in that they give an indication of how well or poorly students will cope without any help. However, IQ should not be used as the only selection criterion for access to higher education.

The tests which are most often used to establish IQ, the Stanford-Binet Scales, and the Wechsler scales (Van der Zanden & Pace, 1984:108) are both tests of a person's verbal and numerical performance. Because the performance components involved in the tasks set in intelligence tests correspond with those found in the academic environment, these tests can provide an imperfect, but fairly good, prediction of academic achievement (Sternberg, 1985:124,125). According to Sternberg, all intelligence tests will, however, be imperfect, because there is more to intelligence than that which can be measured by any intelligence test, and because intelligence is not the only factor that influences performance.

The testing of verbal ability as part of an IQ test is also considered by Olson (1986:357) to be of value. What this component of the test measures, is the individual's competence in text analysis, the recognition of word nuances, the ability to interpret meaning and to discern what a text actually says, as well as the person's representation of language as a symbol with meaning. This aspect of an intelligence test thus indicates the individual's ability to deal with written language, which is an integral part of independent learning. In this sense an IQ measure can be useful as one of several indicators to predict success in higher education.

Furthermore, the nature of intelligence tests promotes their use. They are available, easy to administer, their administration is not very time-consuming, and they have relatively good measurement characteristics and generalisations can be made from their results (Zigler & Seitz, 1982 in Tzuriel & Haywood, 1992:5).

These are some of the arguments in favour of single score intelligence tests. Over the past three decades, with the changing student population and the move towards dynamic assessment methods, there have been more and more arguments against the use of IQ tests alone to assess potential.

4.4.3.2 Arguments against IQ

There are mainly three interconnected types of argument offered against the use of IQ tests to assess potential. The first category of argument deals with the fact that these tests measure acquired knowledge and not natural ability. The second group of arguments emphasises the inability of these tests to identify potential in non-western cultures, and the third deals with objections to the static nature of these tests. Binet and Simon initially designed their intelligence test to assess the ability to learn in an academic setting, with the aim of distinguishing between normal and retarded learners (Sternberg, 1996:461). It is ironic that the greatest opposition to the use of IQ tests has been put forward by researchers who are involved in the same area of research, namely the study of children with learning disabilities.

Some examples of arguments which stress the academically orientated basis of intelligence tests, are the following. Sternberg (1985:120) states forthrightly that most behaviour, and probably all behaviour exhibited on intelligence tests, is learned and thus implies the inappropriateness of these tests for the assessment of natural ability. This argument is supported by Lidz (1987:3) when she argues that IQ fails to reveal meaningful information about learning ability. With reference to the content of the Wechsler Scales, Ceci & Liker (1986:133,135) propose that a good deal of what this IQ test measures is rote learning. Like Lawler (1978:62) Ceci and Liker also doubt the validity of IQ tests as an indication of general intelligence, and state that the construction of the test causes the apparent covariance of scores in different contexts, that is, individuals who score high on one index of intelligence also score high on others.

Research conducted by Ramphal in 1969 in a South African setting, confirms the argument that intelligence tests measure what has been learned, rather than natural ability. Ramphal's research findings indicated that children appear to lose IQ points whenever they are not at school for some time. In his study of Indian children living in South African villages, whose schooling was interrupted because of teacher unavailability, he found a decrease of nearly five IQ points per year, as compared to the IQ scores of Indian children living in nearby villages where schooling was not interrupted (Ceci & Liker, 1986:136). If this is true, it is possible that the IQ scores of

first year students who enter the University from schools where there have been regular stay-aways, could be even lower than they would have been with regular school attendance.

In the second category of argument which deals with the inappropriateness of the application of IQ tests in assessing non-western people, Stott (1987:215) recalls the rationale behind the origin of these tests. He refers to the fact that psychometrists designed IQ tests to conform with the characteristics of thinking and education of the western world. Stott also mentions that IQ tests were used in the United States of America (USA) to discriminate against immigrants of non-Anglo-Saxon origin. The discriminatory nature of IQ tests has been emphasised by several researchers. One of them, Sewell (1987:426), speaks of a growing concern that IQ tests discriminate against students from disadvantaged communities, because instead of the ability of the individual, the quality of the educational programme is the conceptual basis for testing. Furthermore, legislation in the USA during the 1970s which specified that testing for the placement of minority students in ability tracks in schools should be non-discriminatory, suggested that IQ tests discriminated against minority children (Sewell, 1987:429). The culturally biased nature of intelligence tests has also been admitted in consequent court cases against certain schools.

For people from traditional societies, intelligence tests do not reflect either their speaking or thinking practices, and for children from less literate households, tests poorly represent their linguistic skills. Hence, intelligence tests are not valid across cultural groups. They correlate highly with social class, and performance is dramatically affected by schooling (Olson, 1986:357,358; Scribner & Cole, 1981). Olson elaborates further on the discriminatory application of intelligence tests. He argues that these tests are misused when scores are over-interpreted to mean "quality of mind", especially when the results are then valued above more appropriate measures of the specific domain for which actual competence is required. In this way IQ has been used to exclude people from both educational opportunities from which they would benefit and from certain jobs that they are entirely capable of handling (Olson, 1986:357).

In the last category of arguments, the following examples emphasise the static nature of intelligence tests. Budoff (1987:173) refers to IQ tests as product-oriented one-session tests. The difference between measuring product versus process, is also highlighted by Sabatino (1981:130). He describes cognitive development as a dynamic process and intelligence as not fixed, and therefore considers one single measure of intelligence, such as IQ, to be invalid, because the process is not assessed. A further limitation of the traditional approach to the testing of intelligence is that it employs a one-session test which does not make provision for either possible improvement in a person's performance, or for intra-individual variability which might affect performance (Carlson & Wiedl, 1992:169).

Even with appropriate measures of intelligence, there is no guarantee that individuals with high ability will succeed in a higher education environment, because mental ability is not the only factor which determines success. In the following section, non-intellective factors will be discussed.

4.5 Non-intellective factors

The term *non-intellective* factors had been used by cognitive psychologists to group together those factors which are not of a cognitive nature, but which have a definite impact on academic performance. The fact that the discussion of affective development in this section will not be as comprehensive as that of cognitive development has been, should not create the impression that it is of less importance. Although its separation from other non-intellective factors is artificial, motivation (conative factors) will be discussed separately, because of its crucial role in achieving any goal successfully. The discussion starts with a taxonomy of educational objectives for the affective domain, followed by a brief overview of some aspects of affective development, which are of particular importance for learning in the higher education environment. These are attitudes, values and beliefs; autonomy and independence; self-concept and self-esteem.

4.5.1 Affective development

The cognitive and affective domains are so tightly interwoven that it is not possible to

completely separate them. In the following discussion of one of the taxonomies of educational objectives for the affective domain, it seems unavoidable that some of the levels of the taxonomy would include cognitive functions. The researchers were aware of this fact, and expressed their concern about the placement of the sub-categories (Martin & Briggs, 1986:77).

4.5.1.1 Kratwohl, Bloom and Masia's taxonomy

The ordering principle used to determine the levels of this taxonomy was neither from simple to complex, nor from concrete to abstract, but stages of internalisation (Kratwohl, Bloom & Masia, 1964 in Martin & Briggs, 1986:76). The researchers considered the process by which the specific affective factor gradually becomes part of the individual, on a continuum of bare awareness to a level where it becomes a power which guides and controls the person's behaviour. They identified five stages of internalisation, which they considered to be the five levels of educational objectives in their taxonomy of affective development. These are receiving (attending), responding, valuing, organisation and characterisation by a value or a value complex. Each level or category of the taxonomy consists of two or three subcategories, as illustrated by Table 4.2.

As the order of the main categories represents a higher level of internalisation at each new level, so does the order of the sub-categories suggest different levels within each category. For example, in the fifth category, the first sub-category *generalised set* means a basic orientation which enables the individual to act consistently. The next level *characterisation* means the adoption of a philosophy of life which characterises the individual

The first and fourth levels of this taxonomy are actually cognitive information processing functions, but with affective factors added to the process. At level one volition is added. A person might become aware of a stimulus, without any volition involved, but paying attention to something will probably imply some degree of volition, even if it is externally forced upon the individual. At level four the processing function is cognitive, but the content of what is processed is affective.

Table 4.2: Kratwohl et al.'s taxonomy of educational objectives for affective development and the range of meaning of commonly used affective terms

Levels of educational objectives	Sublevels of educational objectives	Meaning of commonly used affective terms against the taxonomy continuum
Receiving	Awareness Willingness to receive Controlled or selective attention	Interest Appreciation
Responding	Acquiescence in responding Willingness to respond Satisfaction in response	Value Adjustment Attitudes
Valuing	Acceptance of a value Preference for a value Commitment	
Organisation	Conceptualisation of a value Organisation of a value system	
Characterisation of a value set	Generalised set Characterisation	

(Kratwohl et al., 1964:37 in Martin & Briggs, 1986:80)

In a higher education context the five levels of this taxonomy can be employed for the affective development of students in a specific discipline. In the following adaptation of Kratwohl et al.'s taxonomy a process of affective development consisting of six instead of five levels is suggested. The additional level is created by dividing level three into an external and internal valuing level. For each level one or more development activity is suggested. All the stages form part of a process aimed at the affective development of students in higher education. The progression through the stages during the facilitation of the process would be the same for different disciplines, but the content would be adapted to fit the paradigm of the specific discipline. The process is illustrated in table 4.3.

The teaching activities in each of the six stages are broadly stated and should be interpreted in terms of the specific value to be developed, and in the context of the

discipline in which this value should be applied. It is probably unrealistic to believe that students would leave the University with a fixed value set, but the aim is to provide them with at least some understanding of and a commitment to affective responses which are considered to be appropriate for their specific profession.

Table 4.3: Stages in the process of affective development in higher education

Level of educational objective	**Sublevel of educational objective**	**Desired Affective outcome**	**Stages of process to achieve affective outcomes**
Receiving	Awareness Willingness to receive Controlled or selective attention	Interest	Make students aware of what they should pay attention to, i.e. what kind of information is important for the specific discipline
Responding	Acquiescence in responding Willingness to respond Satisfaction in response	Interest and Appreciation	Give examples of appropriate responses to stimuli and create a willingness to respond in an appropriate way
External Valuing	Acceptance of a value	Appreciation for specific attitudes and values	Develop understanding of the importance of appropriate responses and the acceptance of a specific kind of response as an appropriate response
Internal Valuing	Preference for a value Commitment	Commitment to values	Develop a preference for and the commitment to respond in an appropriate way
Organisation	Conceptualisation of a value Organisation of a value system	Personalise values Adjustment of existing value set to accommodate new values	Assist students to give personal meaning to values and make them part of their value system
Characterisation of a value set	Generalised set Characterisation	Complete internalisation of new value set	Provide opportunity to practice the application of the new value set so that it can become a way of life

(Adapted from Kratwohl et al., 1964)

In the next section the influence of students' existing attitudes, values and beliefs on their academic performance will be discussed.

4.5.1.2 Attitudes, values, and beliefs

Attitude formation, change and measurement have been an important concept in social psychology, and have been studied from various perspectives. In this section only the extent to which previous experience affects attitude formation, and its relevance to learning, will be discussed.

Definitions of attitude have been formulated from either a cognitive or a motivational perspective (Martin & Briggs, 1986:101). The cognitive perspective deals with the individual's cognitions or with his/her beliefs, while the motivational perspective describes the individual's readiness to respond to motives that have been aroused. A person's attitude reflects the way past experiences have been represented by the individual, organised and stored in memory, and affects the way in which a person approaches new, similar, situations.

Values are described by psychologists as a collection of attitudes formed around some central idea, such as for example work or politics or religion.. A value system is highly personalised, and its organisation is hierarchical. That means that the attitudes within the value system are not of equal importance to the individual. An attitude may also belong to more than one value system (Katz & Stotland, 1959 in Martin & Briggs, 1986:102). A person's value system is closely related to his/her self-concept. Violations or endangerment of a person's values is likely to be interpreted as a threat to the individual's ego and can cause an emotional response.

There are two aspects of this statement that have implications for learning in the higher education environment. The first aspect relates especially to South African higher education, while the second aspect is more universally applicable. Firstly, if one considers that a culture of learning is created by shared values regarding learning (see 3.3), and that attitudes, which are the essence of value systems, are determined by past experience, then to expect the hierarchical organisation of all students' attitudes towards learning to be similar in the South African context is unrealistic. In other words, not all students will attach the same importance to learning because, according to their past experiences, it will hold a different priority position within their value systems.

The second aspect relates to self-concept. If one considers the influence of students' self-concept on their academic performance (see 4.5.1.3), and that the self-concept is threatened when a person's values are endangered, then poor academic performance would discourage a student from attaching greater value to learning, in order to protect the ego. On the other hand, if learning was not high in the hierarchical organisation of the student's value system from the outset, he/she would not have been prepared to devote much time and effort to academic activities. This would probably have resulted in poor performance. Therefore the close relationship between a person's value system and his/her self-concept complicates any attempt to change a student's attitude towards learning.

There is also another implication of students' attitudes towards learning which is worth mentioning. This relates to achievement in specific subjects. The role of affect is of particular importance in the development of higher-order thinking skills (McLeod, 1990:14, 16,17). In his explanation of the difference between attitudes, beliefs, and emotions McLeod emphasises the role of cognition in the development of attitudes and beliefs. The involvement of cognition in the affective response differs in beliefs, attitudes and emotions, and is strongest in the forming of beliefs, which are mainly cognitive in nature and built up rather slowly over time. He considers attitude as an affective response to a certain experience. This response has become stable and routine over time, is of moderate intensity and can be positive or negative. Beliefs and attitudes are difficult to change, because they are built up over time. In contrast with beliefs and attitudes, emotions are mainly affective, can rise in a short time and can change relatively easily.

To return to attitudes and their relevance to higher education, it is not only their school experience that influences students' attitudes towards learning. Their beliefs about the nature of the learning outcome that is valued by the institution, or by individual lecturers, are also shaped by their classroom experiences and by the modes of assessment (Leder & Gunstone, 1990:115,116). The emotional reactions which accompany students' academic activities influence their attitudes towards and their beliefs about these activities, and can affect their performance. Students' beliefs about mathematics, for example, may diminish their ability to solve problems which do not

routine.

Attitudes appear to develop in two different ways , namely by automatisation and by transfer (McLeod, 1990:17). By automatisation is meant a repeated negative reaction which is initially experienced with fairly high intensity but has become automatic, and usually less intense, over time. Transfer involves some element of bias. It happens when the individual attaches an attitude belonging to one cognitive schema to another related schema. For example, a student with a negative attitude towards algebra may transfer the same attitude to geometry.

The automatic nature of the formation of attitudes creates another kind of problem. Students may not be aware that their attitude is wrong, and that their negative attitude is the reason for their poor performance, which thus may be attributed to a lack of ability. This, in turn, has a negative impact on the student's self-concept, which may lead to a further deterioration in performance (see 4.5.1.3).

As can be seen from the above discussion, students' attitudes, values and beliefs are difficult to change, and they affect the students' academic performance. These attitudes, values and beliefs are formed by past experience, including their experiences in the higher education environment. Since a person has more than one value system, the negative impact of students' school experience on their attitude towards learning in higher education, might be diminished , were it possible to lead them to develop a separate value system for learning in higher education (see table 4.2). If their experiences in the higher education environment can bring about a different hierarchical organisation within this new value system, they might be willing to devote more time and effort to their academic activities. This should improve their performance, which in turn would affect their academic self-concept, and influence their decision to persist in the higher education environment (see 2.5.3).

4.5.1.3 Self-concept, self-esteem and self-development

The two concepts self-concept and self-esteem are used interchangeably in the literature. However, in this discussion a distinction is made between the two, similar to that made by Pascarella & Terenzini (1991:170-172). In their view, based on a review

of the literature on self-esteem and self-concept, Pascarella & Terenzini differentiate between the two concepts in the following way.

Self-concept refers to the individual's perceptions of self in comparison to significant others, and is formed through experiences in his/her environment. This implies that self-concept is formed by assessing oneself against external criteria. It is a relational concept and a person can have different self-concepts in different life areas. In the learning environment self-concept is formed by the student's judgement of his/her skills and competencies in relation to that of others. In higher education students' perception of their own standing, both socially and academically, is referred to as their social and academic self-concept, respectively. Both these self-concepts are very important in determining their academic performance as well as in their decision to persist (Martin & Briggs 1986:94, Pascarella & Terenzini, 1991:172; Troskie, 1996:62,71,75; see also 2.5.3.1).

The reference base for the formation of a person's *self-esteem* is considered to be more internal. It involves the assessment of the individual's real self against his/her ideal self. Self-esteem is also more general than self-concept. It is the individual's personal judgement of his/her overall self-worth, that is, how successful, capable, significant and worthy he/she considers him/herself to be, and it expresses an attitude of approval or disapproval (Pascarella & Terenzini, 1991:171).

Both these kinds of self-assessments affect students' academic performance and change during their years in higher education. Based on a review of empirical evidence about students' academic self-concept, Pascarella & Terenzini (1991:173) state that there is a decline in academic self-concept during the first year, but it recovers again, and after four or more years students' academic self-concept is higher than it had been when they enrolled for the first time. This decline, usually during the first year, is probably not a real change in students' self-concepts, but rather an adjustment of their standards by which they compare themselves to other students.

Students' social self-concepts take on a similar pattern of change as that of academic self-concept. The difference is that students' social self-concepts after four or more

years show more gains in some specific areas than in others. Examples of different aspects of the social self-concept are, for example, self-confidence, popularity and leadership ability. The change in self-esteem after four or more years is positive, but there are also fewer fluctuations in students' self-esteem because of a more realistic assessment of self-worth (Pascarella & Terenzini, 1991: 174-176).

Self-development is an independent goal of education (Martin & Briggs, 1986:165), and it entails both cognitive and affective development. Self-development is also to a large extent determined by success and mastery in the performance of academic and non-academic tasks. According to Martin & Briggs (1986:187,188) there are both internal and external conditions of learning. By internal conditions is meant conditions that must be present in the learner before learning can occur. External conditions refers to conditions outside the learner that facilitate learning.

The internal conditions for learning are mainly cognitive by nature, and the most important of these are various kinds of intellectual skills and knowledge. The various categories include intellectual skills for academic mastery, intellectual skills related to realistic goal-setting, self-evaluation, time and resource management, skills related to information literacy, to inter-personal relationships, to self-management, and the ability to identify appropriate role models.

The external conditions should promote the internal conditions, that is, provide the opportunity for exposure to and practice of experiences which would develop the internal conditions. The three major categories of external conditions are provision for success, that is, the opportunity for the learner to experience success, provision for self-directedness, and provision for social interaction.

The listing of these internal and external conditions for self-development are of particular importance for this study, because one of the purposes of the Gencor Bridging Programme (GBP) and foundation programme (FP) is to identify which of the internal conditions are lacking, and to what extent, and then for a limited period of time to provide the external conditions for learning in the higher education environment. During the four-week GBP two of the categories of external conditions

for learning are provided for, namely success and social interaction. The third category, provision for self-directed behaviour is not sufficiently provided for. The importance of self-direction in the total development of students, will be discussed in the following section.

4.5.1.4 Self-direction, autonomy and independence

The term *self-direction* in learning includes the autonomy and independence of learners. In this section the meaning and implications of autonomy and independence in the context of learning will first be explained, and thereafter the importance of encouraging the development of self-directed learners in higher education will be discussed.

Autonomy can refer to the characteristics of a person, or to the learning situation. Personal autonomy means, having "a disposition toward acting and thinking autonomously in all situations (self-determination)", while in the learning situation autonomy refers to "an inclination to exert control over one's learning endeavours (self-management)" (Candy, 1991:101). The first interpretation implies self-direction in life, while the second implies self-direction in learning.

Autonomy in the learning situation refers to the extent to which the learner is in control of his/her own learning. Teacher control and learner control are not in dichotomous relationship which is mutually exclusive, but can be arranged on a continuum with total teacher control at one end and total learner control at the other (Candy, 1991:10,11). In undergraduate education it is unlikely and probably undesirable to operate on a level of total learner control. This would imply that students would not only be responsible for their own learning at their own pace, but that they also choose the content of their learning on their own. Candy (1991:22) emphasises that giving students more of a say in the learning situation is not necessarily the best way to develop self-directed learners. All teaching methods can be placed at some point on the teacher-learner control continuum, with non-interactive lecturing, probably still the most used method in many institutions of higher education, at a point of almost complete teacher control. Using various methods which would gradually give more control to the learner him/herself, would be a more appropriate

way to develop self-directed, autonomous learners.

The development of autonomy is almost universally accepted as a goal of education. (Candy, 1991:118,119). Some of the important characteristics of an autonomous person, as summarised by Candy, are co-operation, mutual respect, individual creativity, flexibility, rational criticism, inner directedness and independence. Another dimension is added by Pascarella & Terenzini (1991:215) who consider interdependence as the highest form of autonomy. Of these characteristics, only independence will be discussed here.

Independence in the learning context refers mainly to independent study. This term has been used since the 1920s in the USA in relation to teaching and learning which is student-centred, rather than teacher-centred, and which focuses on the individual, rather than on the group (Candy, 1991:110,111). In later years the importance of the peer group in student-centred learning has been realised, and a distinction has been made between self-directed learning tasks which involve only the individual student (self-study) and co-operative learning, which is also student-centred but involves the peer group (Johnson, Johnson & Smith, 1991:vi). The individual moves through various stages of development from dependence to interdependence. These stages are illustrated in figure 4.1.

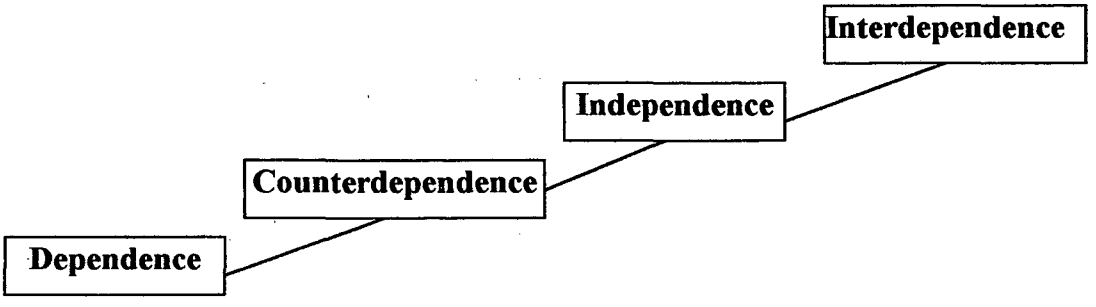


Figure 4.1: Stages in the development of student independence

(Adapted from Boud, 1988:29)

As can be seen in figure 4.1, the student enters higher education in a state of dependence on the lecturer. The real situation is that some students are naturally

inclined to be less independent than others, but if the teaching methods employed by the institution do not allow for, or develop, this independence, these students also become dependent learners. However, if students are encouraged to be independent by the demands of the learning tasks, the following phase they go through is a stage of counterdependence or reaction. The reaction is caused by various factors, for example students react against being dependent, but they also react against having to accept responsibility. That is followed by a phase of independence, during which they can take responsibility for their own learning. However, the end state is not independence, but interdependence. During the final stage, students take responsibility for their own as well as for each others' learning. This is also what happens when co-operative learning methods are used, where students are expected to be interdependent and co-responsible for the learning of the group. The possibilities of co-operative learning, and its implementation in higher education, will be discussed in more detail later in this study (see 5.2.3.2).

Apart from everything that has been mentioned above, a feeling of autonomy, of being in control, also has a strong motivational effect. Motivation as a non-intellective factor, and its influence on the quality of student and subsequent academic performance, together with the effect of the environment on both motivation and effort, will be discussed next.

4.5.2 The influence of motivation and the environment on student effort

In this section motivation as an essential ingredient for success will not be discussed in detail. Neither is the aim to give an elaborate review of the research findings of cultural psychologists or anthropologists regarding the relationship between culture, motivation and academic performance. The aim of this discussion is to highlight the role of motivation as a driving force which determines effort, and to look at one of the possible reasons for differences in student effort, namely the influence of the environment. In other words, the questions to be answered are "how does a student's motivation relate to the effort he/she is prepared to devote to academic activities?" and "how does the environment influence effort?"

To answer the first of these questions two issues will be explored, namely students'

goals as a motivating factor, that is, *why* they are studying, and their attribution inclination. By this latter term is meant whether students attribute their success or failure to internal or external factors, and whether they attribute success or failure to factors within or beyond their control.

There is a relation between a person's goals and the nature as well as the level of their motivation during the performance of a tasks (D'Andrade, 1995:229). Student intent is also a factor which affects academic performance (Stark, Shaw & Lowther, 1989:1) and persistence (see 2.5). Although the reasons why students learn are not necessarily directly related to their personal goals, it can be expected that there must be at least some purpose behind their decision to enrol at a higher education institution. These reasons influence their level of motivation and the quality of their effort. The clearer their goals, the more motivated they are (Stark et al., 1989:57,58). Students' reasons for learning also indicate whether their motivation to study is extrinsic or intrinsic.

In an investigation, conducted during 1993, into the reasons why first year students at the University of Stellenbosch study, more than 90% of the 940 respondents indicated preparation for the job-market as their main reason for learning (Troskie, 1996:102). In one of the inventory subscales used by Meyer & Watson (1991, in Meyer, 1996:71) to evaluate the quality of student learning, a vocational orientation to learning is classified as a form of extrinsic motivation. Intrinsic motivation affects performance more positively than extrinsic motivation, and it was found that differences in students' intrinsic motivation account for more variation in achievement scores of intellectually average groups, than the variance accounted for by intelligence (Haywood, 1968 in Tzuriel, 1991:101). Apart from the fact that it is an extrinsic motivating factor, there are also several other reasons why vocation as a goal of students in higher education would probably cause great variation in the students' level of motivation towards learning and the quality of their effort.

The present economic situation in the country, in which graduates have difficulty in finding employment, is a demotivating factor to students who are mainly motivated by vocational prospects. In addition to this, the previous inequality in job opportunities for various population groups also contributed to an orientation to learning which is

characterised by low motivation and insufficient effort to succeed (see 3.3).

The need for mastery is considered to be one of the most important factors determining test results, learning processes and academic achievement (Tzuriel, 1991:110), but students' effort is related to their perceptions of what is required during assessment (Jenssens, 1992 in Meyer, 1996:68). It follows that in a learning environment where surface learning is encouraged by a heavy workload as well as by the assessment methods of the institution, there would neither be time nor place for learning which can result in mastery. This implies that the academic practices of a higher education institution can diminish students' need for mastery, and thus contribute to poorer performance.

In his explanation of the view of motives-as-drives Covington (1993:52) argues that human behaviour is caused by a need not only to reduce stress, like it is in animals, but also to seek stimulation. The expression of these so-called stimulus motives is conditioned by social rules and conventions. In other words, the kind of stimulation the individual seeks is learned from and influenced by the social rules and conventions of the environment. Thus the individual's behaviour reflects *learned drives*. This has several implications. It means that students' cultural background as well as the higher education environment will influence the nature of the students' stimulus motives. It also implies that the strength and direction of the learned drives that are expressed in certain behaviour are controlled by custom.

If students grow up in an environment in which learning and academic achievement are not stimulus motives, they would probably put little effort into learning and academic achievement. Since stimulus motives are learned drives, they can be adapted by strong alternative influences. This implies that if these students become part of the higher education environment, the culture of this new environment can influence their behaviour. However a feeling of belonging and integration into this new environment is necessary for them to feel part of, and value, the norms of the new environment (see 2.5.3).

An important learned drive approach to achievement motivation which still influences

present day research was developed by John Atkinson and David McClelland during the late 1950s and early 1960s (Covington, 1993:52). According to this theory the need for achievement is due to a conflict between the desire to approach success and the fear of failure and thus the avoidance of situations that might bring about failure. Each person's disposition is such that either his/her hope of success outweighs the fear of failure, and the person thus has an inclination to approach success, and be positive, or the reverse in which case the individual has an inclination to avoid failure.

A reinterpretation of the basic principle of this model in relation to attribution theory led to the statement that peoples' achievement is influenced by the way in which they perceive the causes of their successes and failures (Weiner, 1974; Covington, 1993:55). Positive, success-orientated people attribute their failures to insufficient effort and their successes to a combination of skill and ability. They are in control of the situation. Because they perceive the level of effort as modifiable, these people will persist and work harder to succeed. Failure-threatened people contribute the cause of their failure to a lack of ability and their successes to external factors beyond their control like luck, chance or mood. Because of this they believe success is unlikely and not worth pursuing. Due to their attribution of failure to a lack of ability, failure creates feelings of self-doubt about their ability. This contributes to a negative self-concept and diminishes their inclination to persist. Even when they succeed, this does not build their self-concept because of their perception that success is not due to their own ability and effort, but to external factors.

In spite of all this, we cannot conclude that all success-orientated individuals will achieve, and failure-threatened people will fail. Self-worth plays a more important role in performance than a person's orientation towards success and failure, and perceptions of ability are the most important aspect in students' definition of their academic self-concept (Covington, 1993:58,59). In a competitive environment where only one can be the best, this creates a dilemma for students who work hard and still do not succeed at being the best. Failing in spite of a high level of effort is a reflection on students' ability and might lead to feelings of shame and despondency. It might also lead to students' decision to lower the level of effort, because failing without studying does not reflect on one's ability, and consequently does not affect one's self-worth

negatively.

Once again the assessment practices of the institution can influence students' performance, and the quality of their effort. If a norm-referenced grading system is used, students' performance is ranked. If a criterion-referenced system is used, students' performance is measured against pre-set criteria. In the former case students compete against one another. In the latter case students learn to master content and skills in order to meet the set criteria. This implies that the criteria must be communicated to the students, and that they must understand what they must do in order to succeed.

During his investigation into individual differences in causal attribution related to students' academic success or failure, Meyer (1996:63) found that high risk students' perception of their academic ability and their expected academic performance is often unrealistic. Meyer further concluded that the first few months of the first-year university experience is extremely important to the way in which students attribute the causes of success. Even the potentially best students will have difficulty in believing success is caused by effort and ability, rather than by external factors, if they have negative academic experiences during this early period (Meyer, 1996:67).

This underlines the importance of the basic principles of the strategies for self-development in learning situations suggested by Martin & Briggs (1986:185), which emphasise the importance of an environment in which the probability of success is present. It also adds to the rationale for an extended course like the foundation programme at the University of Stellenbosch (see 5.6.2), in which the first year is spread over more than one year in order to enable the students to succeed.

Because people give meaning to experience in the context of their personal values as well as those of the cultural group to which they belong (see 4.5.1.1), both the home environment and the higher education environment affect students' academic performance. Students' motivation to learn is influenced by their attitudes, values and beliefs, which in turn are shaped by their experience and cultural background. The way in which an individual develops is rooted in society and culture, because the changes in

the individual's behaviour are brought about by the internalisation of culturally produced sign systems (Vygotsky, 1979:7). The environment to which a person is exposed affects his/her development, and the extent of exposure determines the extent to which an individual's potential is developed. Whatever a person's biological potential, this potential will not be developed without at least some opportunities for exploration of the materials which develop a certain kind of intelligence (Walters & Gardner, 1986:181).

This has implications for both the students' academic background which was acquired at school, and for their development while they are studying at a higher education institution. The differences in the facilities and quality of learning at home and in the schools which students attended, will have resulted in differences in the materials to which they were exposed, and thus account for differences in their academic background. What students are exposed to in the higher education environment, and the opportunities they are offered, will determine to what extent they can develop. The role of academic development is to provide the bridge between these two environments.

If it is considered that, although individuals apply different mental mechanisms to a given task or situation, the "potential set of mental mechanisms underlying intelligence is viewed to be the same across all individuals and sociocultural settings" (Sternberg, 1985:xiii), then the role of the environment in academic achievement becomes even more important.

Taking into consideration all that had been said about the personal factors that influence students' cognitive and affective development, as well as the influence of the environment on students' motivation and the quality of their effort, the complexity of the interplay between factors which enable a person to achieve academically becomes clear. It can be concluded that the potential of the individual to succeed in a higher education environment cannot be attributed to one single factor. Success is determined by a combination of various personal and environmental factors.

4.6 Summary

In this chapter the effect of the individual's cognitive and affective development on academic success have been discussed. The construct *intelligence* has been defined and different views of intelligence have been explained. The influence of the environment on a person's development, on the quality of effort and on students' academic performance had been pointed out. In the next chapter the effect of the learning environment of a higher education institution on students' development and academic performance will be discussed. The focus will be on teaching and assessment.

CHAPTER 5

THE ROLE OF THE UNIVERSITY IN STUDENT LEARNING

In the previous chapter the focus was on the cognitive and affective factors that influence learning, and the students' responsibility in the learning process. In this chapter an important part of the institution's role in student learning is highlighted, namely teaching and assessment. This is discussed from a developmental perspective, which considers the role of lecturers as facilitators, mediators and managers of the learning process, and emphasises the co-responsibility of students for their own learning. The value of peer teaching and learning is emphasised and a developmental rather than a traditional approach to assessment is suggested. The chapter ends with a brief discussion of academic development in South Africa and specifically at the University of Stellenbosch.

5.1 Introduction

During their years of study at an institution of higher education students are exposed to many formal and informal learning experiences which contribute to their development, both cognitively and affectively. In this section the focus is on the formal learning experiences provided by the institution. Although all these experiences are accompanied by environmental influences, the discussion will only deal with some of the structured experiences which are planned to develop the student within a specific discipline. The experiences which are considered here are teaching, assessment, and feedback. Figure 5.1 illustrates the continuous application of these three functions.

The Continuous Teaching and Assessment model (CTA) which is illustrated in figure 5.1 represents a string of single educational interventions. Each triangle represents just one teaching-learning activity. This is an adaptation of the Input-Environment-Outcomes model (I-E-O) of Astin (1993:18), which consists of just a single triangle representing Input (I), the total Environment (E) and the final Outcomes (O) of a student's higher education experience. In both these models (IEO and CTA) *Outcomes* indicate the potential of students, i.e. the talents which must be developed, *Input*

represents the personal qualities which the student initially brings to the educational situation and *Environment* constitutes the total educational experience in the higher education environment. Input can influence both Environment and Outcomes, while the Environment can influence only direct and future Outcomes, as well as future Input. The outcomes plus the feedback given regarding the outcomes, create the new input level.

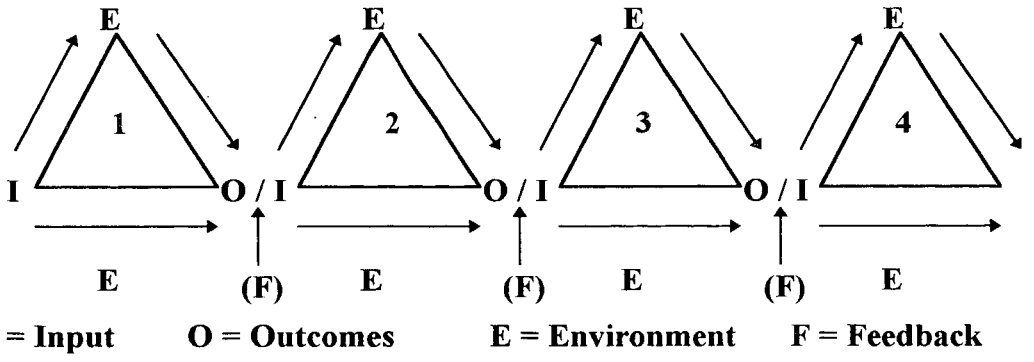


Figure 5.1: Continuous Teaching and Assessment Model (CTA)

In the Continuous Teaching and Assessment model (CTA), *Feedback* is added between Outcomes and the following Input. The function of this feedback is to act as an additional learning experience. Feedback informs the students about personal strengths and weaknesses in their previous learning experience, indicating how and what they can improve on, and should result in a difference between Outcomes of one and Input at the following educational intervention. For example, student input at the start of intervention 2, should be greater than student outcomes after intervention 1.

Examples of the factors which are relevant to each of the three elements input, outcomes and environment are listed in table 5.1. Both input and outcomes factors can be cognitive, affective or behavioural. Input is shaped by the student's nature as well as all his/her prior experience, while outcomes are the products of the interaction between input and the environment. The student's environment is, in a sense, self-produced because the student is able to select particular experiences from his/her environment. The general higher education environmental factors can be divided into two broad categories, namely the characteristics of the institution, which affect all students, and the student's own particular educational environment, as chosen by him/herself. The latter consists of four general areas, namely the peer environment, the

classroom environment, the administrative and the physical environments (Astin, 1993:83,85,87). The composition of the student population, as well as the nature of the institution, will determine which factors should be included as general input, desired outcomes and environmental factors. Therefore the factors mentioned in table 5.1 are not intended to be a complete list of all possible factors in each category, but just some of the more general ones related to the higher education environment.

Table 5.1: Relevant factors at the input and outcomes levels, and in the environment

Input	Environment	Outcomes
Characteristics of student Knowledge Level of cognitive development Aspirations and expectations Academic self-concept Social self-concept Values and attitudes Beliefs Behavioural patterns Educational background	Organisational culture Organisational climate Classroom climate Lecturers' : - characteristics - knowledge - teaching ability - experience Curriculum Teaching methods Evaluation practices Staff-student relations Time on task Study methods Living arrangements Student peer group Use of addictive substances	Mastery of subject matter Academic ability Problem-solving Basic learning skills Self-concept Values and attitudes Beliefs Interests Level of overall satisfaction with the higher education experience

(Adapted from Astin, 1993:70-93)

The interaction between input and the environment affects outcomes. It is, however, important to note that it is not only the *real* environment that affects student outcomes, but also the *perceived* environment. This adds another affective dimension to the interaction between the environment and student input, because an intentionally positive environmental factor might be perceived as negative by some students. The nature and quality of both input and environment will determine the nature and quality of the outcomes. This has already been explained during the discussion of quality in higher education (see 2.2.2). In the South African situation, for example, this implies that not only the difference in academic background, but also the aspirations and

expectations of students, as well as their values and attitudes towards learning, will play an important part in the quality of the outcomes (see 4.5.1.1). However, since it is the interaction between input and environment that produces the outcomes, the influence of the environment should not be underestimated. One of the important environmental factors that affects students' academic performance is teaching . This will be discussed next.

5.2 Teaching and learning

Teaching is an age-old practice. It implies someone who knows more than others, for whatever reason, telling these others about what he/she knows. In the traditional approach, which favours lecturing, teaching is not a conversation, because those who do not know are not supposed to air their views or share their ideas. They must keep quiet, listen and learn. This notion of teaching and learning has changed. For effective learning to take place, teaching should be an interactive process.

Not only the approach to teaching, but also the methods have changed. The idea of a presentation as the best way of teaching has also changed, for several reasons. One of the prerequisites for an effective presentation is to speak at the level of the audience. With a homogeneous, relatively small audience, as the student populations in higher education institutions used to be, it is not so difficult to assess the level of the audience and address them in a way which is accessible to all of them. However, the diverse character of the present day student populations and the large classes that need to be taught, make it difficult to reach everybody by way of a presentation.

In spite of this, the most commonly used teaching method in higher education is still the lecture (Johnson, Johnson & Smith, 1991:84). The effectiveness and appropriateness of this traditional way of teaching, during which an expert or knowledgeable person "transmits" knowledge to students who are supposed to passively sit and listen and absorb, has been questioned seriously. However, there are circumstances in which the lecture is still the best method to use. Some such circumstances are, for example, where it is necessary to disseminate a large amount of information in a relatively short time, to present material which is not freely available,

to arouse interest, and to expose students to subject content integrated from many sources within a limited period of time (Johnson et al., 1991:85). But for other situations the need has arisen to consider alternative, more effective, ways to promote learning. Three alternative approaches aimed at facilitating learning in a diverse student group will be discussed here, namely mediation, self-directed learning, and peer teaching.

5.2.1 Mediation

The term *mediation* in the educational context implies that there should be some mediator between the learner and the learning material. Both Lev Vygotsky and Reuven Feuerstein used the term in relation to more effective learning. They emphasised the role of socialisation in cognitive development and considered it as the process through which mediation was facilitated. However, the process by which mediation takes place was interpreted differently by these two researchers.

In Vygotksy's opinion a sign acts as mediator between stimulus and response. He believed that the individual makes indirect connections between stimuli and his/her responses through various mediating links. For him the term *mediation* meant that the individual actually modifies the stimulus in the process of responding to it. For example, he considered language as essential for, and as a mediator in, the organisation of higher psychological functions. In Vygotsky's view, mediation meant "the entire structure of the activity which produced behaviour" (Vygotsky, 1979:14).

Mediation in Feuerstein's approach also implied some modification between stimulus and response, but this mediating activity was not carried out by the individual self by means of signs, but by another more knowledgeable person (Feuerstein 1991:9). In Feuerstein's research into the modifiability of cognitive structures, he made use of what he calls mediated learning experiences (MLE). For a learning event to be classified as MLE, it has to meet at least three definite criteria. These are intention and reciprocity, transcendence, and mediation of meaning (Feuerstein, 1991:18-24). The first of these criteria implies that the learning activity must be purposeful and that there must be mutual agreement between the mediator and the mediatee to be involved in

the learning experience. The second criterion, transcendence, means that the mediator must go beyond the immediate goals or context of the exercise. Mediation of meaning, the third criterion, implies that the mediator explains the meaning of the interaction, namely the "why" and "what for " of the experience.

There are actually twelve parameters which Feuerstein uses to describe MLE, but the first three, mentioned above, are essential for MLE. Mediation of meaning is considered to be the one parameter which is influenced most by the cultural heritage of the individuals involved in the experience. The *meaning* reflects the attitudes, values and mores which underlie the transformation of the stimuli and of the transmitted behaviour (Feuerstein & Feuerstein, 1991:28).

Although Feuerstein used MLE mainly to help children with cognitive disabilities, the principle can be applied also in the higher education context to adolescents whose potential cognitive structures are underdeveloped. The kind of interventions that take place during mediation are according to Rand (1991:74), as follows:

- filtering of stimuli and the presentation of only those that are relevant to the situation, task and goals;
- adapting the intensity of stimuli to be either stronger or weaker, to suit the situation so as to enable them to be perceived by the individual;
- ordering the stimuli to create a meaningful relationship among them;
- focusing on the most important stimuli needed to solve the problem;
- regulating the behaviour of the learner to constrain impulsiveness, or prompting to promote relevant activity towards the attainment of the given goals;
- facilitating reasoning and the logical analysis of situations, events and relationships, as required by the needs and goals of the task.

By using these mediational processes an awareness of various strategies, principles and general rules is created, and the learner gets some practice in using these strategies. The goal is not to satisfy the immediate need, but to develop the ability to cope with learning situations and problem-solving autonomously. This leads to another goal of higher education, namely to foster autonomy in all students, and bring about a wider acceptance of the benefit of some degree of self-directed learning already at under-

graduate level.

5.2.2 Self-directed learning

Like autonomy, self-direction in higher education is both a goal and a method, thus both product and process. As a goal or product it can be considered a characteristic of the learner, who is autonomous and self-directed. As a method or process it is a way of organising student learning. In his description of self-direction, Candy (1991:6-19) explains that self-direction refers to four different, but related, phenomena. These are *self direction* as, firstly, a personal characteristic (personal autonomy), secondly, the capacity and willingness to take responsibility for one's own learning (self-management), thirdly, as a method of instruction in formal settings (learner control), and fourthly, as the person's own efforts to make use of learning opportunities in a non-institutional setting (autodidaxy). In higher education, and especially regarding under-graduate students, the first three of these interpretations should be considered. Personal autonomy has already been discussed (see 4.5.1.3), therefore in this section the focus will be on self-management and on learner control.

5.2.2.1 Self-management

People may vary in their ability in and capacity for self-directed learning, but the individual's willingness to take responsibility for his/her own learning can be enhanced (Candy, 1991:99; Pintrich, 1995:9). It is this possibility which makes self-directed learning a worthwhile pursuit, from both the student's as well as from the institutional perspective. It should be kept in mind, however, that although the principle of self-direction promises a cure for many chronic ailments in higher education, such as a lack of motivation or the absence of a learning culture, institutions should not be unrealistic about what can be achieved at under-graduate level by means of self-directed learning. Apart from the diversity in the ability and capacity of the student population, the adolescent's level of maturity should also be considered when educational experiences which should enhance the capacity for self-management are planned.

Self-management or self-regulation, as referred to by Pintrich (1995:7) involves the regulation of three different aspects of academic learning, namely the regulation of

behaviour, of motivation and affect, and of cognitive strategies. The regulation or management of each of these can be developed by exposure to experiences which make the practice of these skills and strategies possible. What is meant by each of the three aspects, is the following.

Self-regulation of behaviour refers to the student's control over available resources in the academic environment, such as time, a place to study, facilities like the library and technology, peers, and academic staff. All of these can contribute to a student's learning, provided that the student regulates carefully how each of the resources is used. For example, students can consult either their peers or a lecturer when they encounter an academic problem, but it is their responsibility to decide whom to consult, and to do it timelously. *Self-regulation of motivation and affect* involves students' responsibility to control and change their attitudes and beliefs (see 4.5.1.2), as well as their goal orientation which directs and motivates them to be successful in a specific course. Students can also learn how to control the emotions, like anxiety, which affect their performance negatively. The third aspect *self-regulation of cognition* refers to metacognitive strategies (see 4.4.3.3).

The five general principles that underlie the various ways in which self-management can be enhanced are as follows (Pintrich, 1995:9-11):

- Students need to be aware of their own behaviour, motivation, and cognition.
- Students need to have positive motivational beliefs.
- Academic staff can be role models regarding self-regulated learning.
- Students need to have the opportunity to practise self-regulatory learning strategies.
- Classroom tasks can afford these opportunities for self-management to students.

It is important to remember that self-management or self-regulation is not only a process, but also a disposition, which is not acquired overnight. It must be developed gradually over time. The importance of a gradual escalation in the level of responsibility that is expected from students will become clear in the discussion of another meaning of self-direction, namely learner control.

5.2.2.2 Learner control

During the discussion of autonomy (see 4.5.1.3) the continuum of teacher and learner control has been discussed. It was also mentioned that all teaching methods can be placed at a specific point on this continuum, according to the level of the involvement and responsibility of each of the parties in the particular method. Against the background of this changing level of control, it is necessary to consider some practical issues regarding this matter.

Neither Candy (1991:22) nor Gibbs (1993:34) suggests that all control should be handed over to under-graduate students. Both these authors are in favour of greater independence for students in their learning activities, but warn against a situation where neither the student nor the lecturer is in control. They both propose that methods with more and less student control should be used together in the same course.

Another interpretation of self-direction which suggests teacher and learner control on a continuum, is given by Sheldon & Olson (1998:1). They distinguish between various levels of self-direction by students, and place self-study at the high teacher control end of the continuum and self-direction at the opposite high student control end. Sheldon & Olson explain that the development of students to be self-directed learners should start with self-study, where students are told by the lecturer exactly what to read. In some cases the additional reading material might even be given to them in the form of a reader or hand-outs. How this process towards independence can be developed, is illustrated in figure 5.2. Student should learn to ask the relevant questions which would help them to progress through the process. This figure is based on the five stages of the curriculum cycle namely situation analysis, setting aims and objectives, selecting content, selecting teaching methods and strategies, and selecting evaluation procedures (Kachelhofer, Malan & Knoetze, 1991:7). This cycle starts at the top and goes round clockwise, in the same way as figure 5.2 progresses through the various stages.

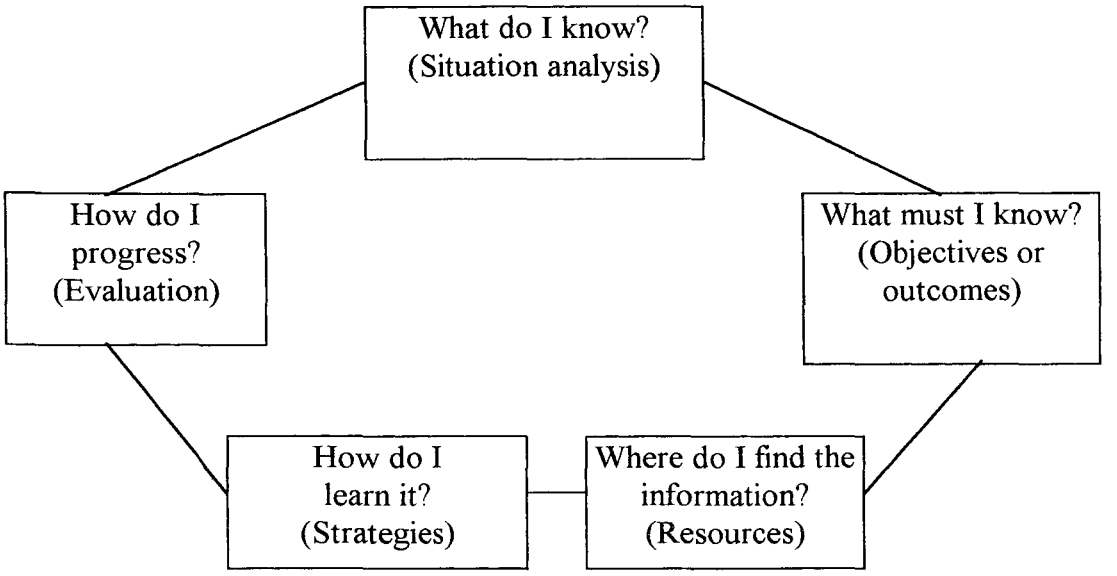


Figure 5.2: The cycle of activities in the development of self-direction

When this process is started with very dependent learners, the activities at various stages of the cycle can be prescribed by the lecturer. For example, initially students can be requested only to search for a few more resources than those already given to them while at the totally self-directed stage, only the task is set and students must complete the whole cycle on their own. At the start of each new cycle the level of the students' self-direction is assessed, in order to be able to plan the learning activities of the next cycle on a higher level of difficulty, so that the challenge posed to the students increases gradually in an upward spiral.

As indicated during the discussion of the development of student independence (see 4.5.1.4, figure 4.1), the next stage after independence is interdependence. In the following section the development of interdependence by means of peer teaching and co-operative learning will be discussed.

5.2.3 Peer teaching and co-operative learning

The use of the peer group to promote teaching and learning is not a new concept. Many students consult their peers when they encounter academic problems. However, the deliberately planned and structured forms of both peer teaching and peer learning are often under-utilised in the formal higher education environment. How these

mechanisms can be employed to foster student learning and develop interdependence will become clear during the following discussion.

5.2.3.1 Peer teaching

Although peer teaching had already been used in ancient Greece, it has only been since the 1960s that the first reports of students teaching other students, have been published (Whitman, 1988:iii). In most of these instances undergraduate students were used as teaching assistants and tutors to alleviate the problem of large classes in which there is little opportunity for interaction with the students.

The advantage of peer teaching is that both student teachers and learners learn. There are cognitive and affective gains from peer teaching, especially when students can alternate between the roles (Whitman, 1988:8). Cognitively the student teacher benefits because, unlike studying for a test or examination, preparing work to teach it to others implies that the student teacher must, firstly, understand it well; secondly, be able to organise the information in such a way that it can be presented in a structured and logical way, and thirdly, be able to identify the key concepts. Thus the student teacher has to take a deep approach to learning, while surface learning might have been sufficient to pass a test or examination. The need to be able to differentiate between key concepts and information that is of secondary importance also develops the student's judgement ability. The benefits to the learners, on the other hand, are that their peer teacher can present the material at a level that is more accessible to them, and that they are freer to ask questions or to admit that they do not fully understand something.

The affective benefits are more difficult to assess, but they are mainly related to the fact that helping another increases a person's feeling of personal competence, heightens self-acceptance and self-awareness, as well as fostering an awareness of and tolerance for others (Whitman, 1988:8).

There are two categories of peer teaching that have been used in higher education, namely near-peer and co-peer teaching (Whitman, 1988:14-31). *Near-peer teaching* makes use of a more senior undergraduate student to act as teaching assistant, as tutor

or as counsellor. The roles of the peer teacher and learner are not interchangeable in near-peer teaching. *Teaching assistants* usually function in small-group context. They take over some of the tasks from the lecturer, for example in laboratory work, and in helping student groups in-between classes to understand the work better. *Tutors* on the other hand work on a one-to-one basis. They often assist weaker students individually and can also take over some of the assessment tasks of the lecturer, inter alia in the marking of objective tests. *Peer counsellors* are similar to peer tutors. They also work on a one-to-one basis, but while the focus of the tutor is more course specific, the counsellor works more generally, and his/her duties might include acting as a mentor for students. A mentor may offer academic, social or vocational counselling, or act as a role model, but he/she provides very little assistance with direct curriculum content (Bochner, Gibbs & Wisker, 1993:25).

The other kind of peer teaching mentioned by Whitman, is *co-peer teaching*. This involves students who are at the same level as their peers in partnerships and work groups. In co-peer teaching the roles of peer teacher and learner are interchangeable. Marcel Goldschmidt who organised learning cells at the McGill University in the early 1970s is considered an innovator of student partnerships (Whitman, 1988:24). Another form of co-peer teaching, work groups, involves groups of students who work together to enhance one another's learning. This idea of a work group was further expanded by other educators into what is known as learning teams. A learning team is a sort of self-help group in which students support each other and maximise the team members' learning in whatever way necessary (Gibbs, 1993b:19). This idea will be discussed further in the next section with the explanation of the use of base groups in co-operative learning.

5.2.3.2 Co-operative learning

Co-operative learning is based on the principle of interdependence. This is also the main characteristic that distinguishes a co-operative learning group from the various other teaching methods which make use of small group discussion techniques in a formal educational setting. Co-operative learning as defined by Johnson, Johnson & Smith (1991:iii, 12) is the "instructional use of small groups ... (in which) ... students work together to maximise their own and each other's learning". The focus in co-

operative learning is on positive interdependence, face-to-face interaction, the appropriate use of interpersonal and small group techniques, shared goals, accountability and co-responsibility, and on the constant monitoring of the group process, that is, how well the group works together (Johnson et al., 1991:25).

The way in which students interact with each other depends on the kind of interdependence which is structured between them. Research which compared the results of competitive, co-operative and individualistic efforts both at college and in adults, has been conducted over the past 25 years at the University of Minnesota's Co-operative Learning Centre. The findings confirmed repeatedly the value of social interdependence. In co-operative learning the positive interdependence leads to interaction which produces the following three categories of outcome: more effort by students to achieve, positive relationships between students, and better psychological adjustment and social competence (Johnson et al., 1991:28-29).

The kinds of interaction which are referred to in the previous statement, and which are beneficial to students' development are:

- giving and receiving assistance;
- information exchange, cognitive stimulation and an improved ability to communicate;
- the opportunity to give and receive peer feedback;
- the challenge and constructive solution of controversy;
- commitment to the achievement of shared goals;
- mutual influence;
- higher motivation to achieve and
- interpersonal trust.

These are all different kinds of interaction which students probably will be exposed to in their later work life in a team. At undergraduate level, students can experience most of these interactions in any of the three types of co-operative learning groups, namely formal, informal and base groups. None of the various possible strategies explained by Johnson et al. (1991:57-78; 91-101) that can be used within the categories of formal and informal co-operative learning group will be discussed here, but the main

characteristics and differences between the two types of groups will be mentioned, as well as two or three examples of each. The third type of group, base groups, will be discussed in more detail.

Formal co-operative learning groups have fixed membership, have a well defined task to complete, and can exist for a few days or for several weeks. Some examples of these are the jigsaw strategy, peer editing, and co-operative reading pairs. Informal co-operative learning groups are temporary, ad hoc, and last for only one contact session or discussion, for example introductory focused discussion, question-and-answer pairs, progress checks, and peer feedback groups. (Johnson et al., 1991:57,90).

The third kind of co-operative learning group, namely base groups, is a form of combined academic and social support groups. Especially in large classes the formation of base groups can be a useful way in which to counter anonymity and feelings of estrangement within the large student group. Class base groups are heterogeneous groups that last for the duration of the class (a semester or year) or can even last for a whole course, from the first to the final year. The members of a base group meet regularly and they function as a support group for all members of the group regarding the following (Johnson et al., 1991:105):

- course content and skills that have to be mastered;
- thinking critically about the work, problem-solving, peer feedback and getting the work done on time;
- providing structure for administrative and organisational procedures regarding course requirements, for example with assignments, or class attendance when someone is ill;
- supporting each other in personal matters.

The key to success in base groups as well as in all other co-operative learning is co-operation, not competition. Base groups, like other forms of co-operative learning, create the opportunity for students to build relations with peers. Peer relationships contribute to both the social and cognitive development of students in the following ways (Johnson et al., 1991:48-51):

- By interaction with peers, students learn attitudes, values, and skills which they do

not acquire through interaction with adults outside the academic environment. Peers shape social behaviour, attitudes and perspectives.

- Interaction with peers provides support and opportunities, and shapes acceptable behaviour, while rejection by peers leads to anti-social behaviour, aggressiveness, disruptiveness, and other negative kinds of behaviour.
- Students learn from peers whom they admire, how to control impulsive behaviour, for example aggressiveness.
- Students gain a wider perspective on situations and problems through discussions with peers.
- Students' values and the social sensitivity required for autonomy are influenced by their relationships with peers.
- Students need close relationships with peers to share their emotions, dreams, and thoughts in order to develop into well-balanced adults. Friendships during adolescence seem to decrease the risk of mental ailments.
- Peer relationships serve as a frame of reference for perceiving oneself.
- Peers have a strong influence on productivity.
- Peers have a strong influence on students' educational aspirations.

Constructive peer relations which create a sense of belonging, acceptance, support, and caring, rather than feelings of hostility and rejection, contribute to student persistence (see 2.5). If properly utilised, a system which capitalises on the natural tendency of students to seek support from their peers, has the potential not only to decrease the drop-out rate of the institution, but also to improve the academic success of students.

In the following section the other responsibility of the institution regarding students' learning is discussed, namely assessment.

5.3 Assessment

Traditionally the evaluation of students was based on grades and pass-fail criteria. This is still the reigning practice in many institutions. However, from a developmental perspective, the purpose of assessment is learning. This implies that the nature and

focus of assessment should change from summative to formative assessment, and that feedback should form an integral part of every assessment activity (Cosser et al., 1999:8). Since development is a continuous process and effective feedback not only informs students about their progress, but also indicates how they can improve, it follows that, in order to be a learning opportunity, assessment and feedback should occur at regular intervals. Peer and self-assessment can be valuable in this regard and form part of a programme of continuous assessment which would demonstrate an effective developmental approach. A short explanation of each of the various kinds of assessment will be given next.

5.3.1 Summative and formative assessment

Summative assessment is done after completion of a course or a module or a section of the work. It produces a measure which sums up achievement. The focus is on the product and feedback does not necessarily form a part of this kind of assessment. Summative assessment has no other use but to describe what has been achieved (Brown & Knight, 1995:48). This is the kind of assessment that has been used traditionally, most often to make pass/fail decisions.

Formative assessment, on the other hand, is done at various intervals during the course. It gives an estimate of achievement and is used to help in the learning process. Therefore feedback forms an essential part of formative assessment. Formative assessment covers work that is done by students as part of their course work. It focuses on the process or on the product (Brown & Pendlebury, 1992:78). It can be applied individually or in groups and the results need not contribute to the students' year mark. The main purpose of formative evaluation is learning and development.

Summative and formative assessment may share the same methods, but a single assessment event should not be used simultaneously for summative and formative purposes. An assessment method is neutral, it is the purpose that differs.

5.3.2 Continuous assessment

Continuous assessment is an alternative to summative assessment. Instead of a single

assessment event which determines the student's level of performance, it is a gradual accumulation of performance marks throughout the course (Malan, Kachelhofer & du Plessis, 1991:155). The advantage of continuous assessment is that it can focus on various aims and measure different aspects of the total performance of students. The nature of continuous assessment makes it possible to give feedback after every assessment event. Although continuous assessment usually involves more formal assessment events, because the results are used towards the students' year marks, it is still a developmental activity and a learning opportunity.

Continuous assessment involves more marking for the lecturer than formative assessment, because the performance results are used to decide whether the student is promoted to the next stage of the course. It is, however, a more valid way of assessing a students' performance than summative assessment. A further advantage of continuous assessment is that the lecturer becomes aware of learning or comprehension problems while there is still an opportunity to solve the problem.

5.3.3 Peer- and self-assessment

Peer assessment is a form of assessment which is often used in our daily lives. It involves assessing a peer and being assessed by a peer. The assessment usually takes place after the execution of some activity or a series of activities, often in a group situation in which the members of the group perform similar activities. The assessment may be informal comments, or it may consist of ratings on a checklist or marking something against a set of pre-planned criteria (Brown & Pendlebury, 1992:79-80).

Peer assessment is used to develop students' capacity for self-assessment. Evaluating others' performance on a task similar to the task one has also performed just prior to the evaluation, makes self-assessment possible together with the assessment of the peers' performance against the pre-set criteria. Peer assessment is used to assess both product and process, and together with peer feedback forms an essential part of co-operative learning.

Self-assessment, like peer-assessment, is also used to develop the students' ability to

evaluate themselves. The questions asked during self-assessment are "what have I been doing?, how did I do it?, why did I do it in this way? how could I have done it better?" (Brown & Pendlebury, 1992:81). Self-assessment can be done intuitively, but this is not the best way in an educational setting. It is desirable to use criteria or checklists for self-assessment. These criteria can be generated by the group in a class situation, or given by the lecturer, or can be provided by external bodies. Self-assessment can be used to assess a process or a product.

The value of self-assessment is that it cultivates a habit of regulating what one is doing. This is an essential characteristic of a self-directed learner. An additional benefit to both the student and the teacher is that students develop a sense of quality or standards against which they can measure their performance on similar tasks. The advantage to the student is an enhanced sense of being in control, which improves the student's self-concept. The advantage to the lecturer is that students become less dependent, the quality of their work improves and it saves marking and feedback time.

All these methods can be used to assess performance as part of a process or as an end-product. When the result of assessment indicates that no, or very little, learning has taken place, it is necessary to establish the reasons for this.

5.3.4 Assessing non-learning situations

When first generation students perform poorly, we often tend to blame the students' inability without considering other possible reasons for their poor performance. In a non-learning situation it is important to establish the real reason why learning does not take place. Feuerstein suggests three possible reasons for a non-learning situation, namely teacher "disability", learner "disability" and/or curriculum "disability". In some cases the curriculum can prevent the teacher from being effective (Feuerstein, Miller, Hoffman, Rand, Mintzker & Jensen, 1981:270). The influence of the curriculum on academic performance is discussed in more detail lateron (see 5.4).

If the reason for non-learning is situated in the learner, it is important to establish at which stage the non-learning occurs. Feuerstein again refers to three possibilities,

namely at the input or output of the mental act, or at the elaboration phase (Feuerstein, Rand, Jensen, Kaniel & Tzuriel, 1987:46).

Although these statements by Feuerstein were made in relation to children with learning deficiencies, these categories of possible reasons for non-learning are also important in the higher education context. For example curriculum "disability" can not only cause the lecturer to be ineffective, but if the learning material or the presentation is at an inappropriate level or the content is, for example, offensive to the learner it will prevent effective learning (see 5.4). The value of identifying the stage at which the blockage to learning exists should not be underestimated. This can prevent a great amount of misperception about the real ability of students, and ensure that appropriate assistance is given to weaker students. For example, a student who has a problem during an assessment event at the input phase might not understand the question because he/she does not understand the meaning of the words. This student has a language problem, rather than a learning problem. If the problem is at the output phase, it might be that the student cannot express him-/herself, or it could again be a language problem. In both these cases the real reason for poor performance is not necessarily in the quality of the learning that took place, or that the student does not have sufficient knowledge about the topic. Insufficient knowledge or the inferior quality of learning can be detected if it is identified that the problem lies at the elaboration stage.

What is more important, and perhaps easier to identify through assessment, is at which of these three stages the student went wrong in the learning process. At the input phase the student might have been unable to understand the explanation of the lecturer, or in a self-study situation could have failed to differentiate between the key concepts and material of secondary importance. At the output phase any of the failures mentioned above could have occurred during the assessment. At the elaboration phase students could have studied wrongly, or made the wrong associations between the new material and existing knowledge. If it can be identified at what stage in the learning process the blockage occurred, appropriate learning activities can be designed to remove the blockage to learning.

None of these reasons for non-learning, or the stage at which the learning activity is deficient, can be detected by summative evaluation. However, in continuous formative assessment the assessment activity can target these areas separately, and in such a way that the real learning problem can be identified.

Teaching and assessment methods and strategies form part of the higher education curriculum. As one of the measures to rectify the inequalities in the South African educational system the ANC government demands the restructuring of the traditional higher education curriculum (Department of Education, 1997:19). How various features of the traditional curriculum were and still are contributing to non-learning situations in South African higher education institutions because of what Feuerstein et al. (1981:270) refer to as "curriculum deficiency", will be discussed in the following section.

5.4 The need to transform the traditional curriculum

The fast changing world of science and technology was one of the factors that brought about a paradigm shift in the approach to international higher education. It is no longer appropriate to equip students with a body of knowledge that will soon be outdated or even obsolete. Employers need graduates who know how to obtain and apply knowledge (Luckett, 1995:126). Thus the focus in higher education shifted from content to the learner, and from a teacher-centred to a student-centred approach (Candy, 1991:8).

South African higher education is also in a process of transformation. Since the publication of the report of the National Commission on Higher Education (NCHE) in 1995 and the institution of the NQF and SAQA in the following year, drastic changes are taking place in the approach to higher education and to the curriculum (SAQA, 1998:2). The need to change the curriculum in order to accommodate the diverse student population has been expressed in academic development circles during the 1980s already (Scott, 1984:17; Hunter, 1989:68).

There are, however, several factors that complicate the transition to a new approach (Luckett, 1995:128-130) and the internal structure and culture of institutions might

either limit or enable change. Firstly the traditional, elitist British model on which the South African universities are based, do not allow for mass education of a diverse student population. Secondly, the subsidy formula which emphasises publication in internationally accredited journals, does not favour academics who devote their time and energy to innovation in programme design and implementation which would facilitate student learning. A third constraint is the organisational structure of the universities. These consist of hierarchical structures with autonomous sub-systems (faculties and departments). Deans and heads of departments are reluctant to sacrifice student numbers in order to accommodate new programmes, because the funding system is based on full-time equivalent (FTE) students. These three factors put forward by Luckett (1995:129) deal with international status and funding concerns which have an influence on the curriculum. The following factors affect the curriculum directly.

The traditions and culture of an institution influence the perceived meaning and nature of knowledge, as well as the concept of teaching and learning. In many institutions this result in the perpetuation of teaching practices which still focus on the traditional, teacher- and content-centred model, in which the transmission of a body of knowledge is favoured. The way in which the traditional curriculum is organised and presented assume a homogeneous student population which are adequately prepared for higher education (Luckett, 1995:30). This is no longer the case.

Many of the problems that non-traditional students experience stem from the way the curriculum is planned, presented and assessed (Starfield, 1994:26,27), and from the assumptions underlying these processes (Scott, 1984:17; Bellis, 1998:8). Providing students with skills that might assist them to cope with the memorisation and reproduction of a content-driven curriculum, without providing some understanding of the implicit processes, is a simplistic approach to the problem and will not guarantee success (Miller, 1997:16,17). Although it contributes to students' understanding of the learning material it is also a fallacy to assume that merely changing form a Eurocentric approach to the Africanisation of curriculum content will ensure student learning (Starfield, 1994:26; Dison & Rule, 1996:84). What is needed is a curriculum that will lead students to an understanding of how knowledge is created and managed in a

specific discipline and what values, assumptions and processes are acceptable and used in the development of new knowledge. In other words, through the curriculum students must understand how to think and learn in a specific discipline (Starfield, 1994:26).

Learning involves an understanding of both the content and the structure of the learning tasks. The implicit and explicit ways in which university education, that is teaching and learning, is organised and structured developed over time in a specific historical context (Craig, 1996:51; Bellis, 1998:7). Craig argues that for those people who were outside the process of development, the rules which are implied by certain tasks are unfamiliar and strange, and adaptation to these rules and conventions is often the most difficult part of the learning task. The traditional curriculum does not help students to understand and adapt to these rules. Students are confronted with too much and too varied content, and there is not sufficient explanation and opportunities to understand and practise the application of these rules (Craig, 1996:52). Learning involves different levels of task involvement (see 4.3.3.3). To learn the content of a task (what it is) is a cognitive action, to learn how to manipulate or work with the content one needs both metacognitive knowledge (how to use and monitor appropriate strategies), and epistemic knowledge (rules of the task). These last two kinds of knowledge are not taught by the traditional curriculum (Craig, 1996:53).

This argument is supported by Dison and Rule (1996:86,87), who explain the competencies that students need in order to understand and function within a specific discipline. The authors argue as follows: Each discipline has its own *codes* (language, terminology), *conventions* (way of writing, referencing, doing research), *values* (what qualifies as knowledge and valid evidence), *canons* (authoritative sources: primary texts; critics and commentators) *skills* (cognitive and linguistic, in order to operationalise all the previous aspects) (Dison & Rule, 1996:87). Students bring their own prior knowledge and assumptions about knowledge and learning to the institution. In order to succeed they are expected to encode these insights and experiences into the discourse of the discipline, often without much understanding of the values and epistemic structures governing the discipline. Dison and Rule further suggest that to provide disciplinary competence, the curriculum should enable students

to accomplish four types of competence. These are *cognitive competence* (mastery of concepts, canons, critical thinking), *semiotic competence* (mastery of disciplinary codes), *strategic competence* (ability to make informed choices within the departmental setting) and *institutional competence* (ability to survive within the institution: computer and information literacy; communication skills) (Dison & Rule, 1996:90).

To change the "deficient" content-centred curriculum into a curriculum which focuses on student learning through understanding, thinking and reflection (Luckett, 1995:10) several factors should be taken into account when learning experiences are designed. These are, as suggested by Dison and Rule (1992-93), students' own understandings and assumptions about knowledge and learning; how these existing knowledge and skills relate to and can lead to discourse in the disciplinary culture; the level of students' cognitive development; how to move students from a surface to a deep learning approach and how to relate assessment procedures to both learning outcomes and to teaching and learning activities.

In order to bring about the desired change in the approach to teaching and learning in higher education, it is necessary to redesign educational programmes and not just "patch up the leaks in existing curricula" (Dison & Rule, 1996:83). This is an area in which academic development agents can play a significant role and opens up new opportunities and challenges for academic development in South Africa.

5.5 Academic development at South African universities

Academic development (AD) officially started in South Africa during the early 1980s (Hunter, 1989:69). There were, however, during the 1970s already various co-ordinated activities to support students at some of the English-speaking historically white universities (HWU), for example at the University of the Witwatersrand (Wits) and at the University of Cape Town (UCT) (CASE, 1993). The scope, context and nature of academic development were closely linked to the institutions' missions and student populations. Consequently the evolvement of AD at the different universities varied (Moyo, Donn & Hounsell, 1997:4). During the 1980s AD focused on student

development at the HWUs, on academic staff development at some of the historically *black* universities (HBU) (NCHE, 1995:144), while at some of the Afrikaans-speaking HWUs there were no formal AD initiatives until the early 1990s (Moyo, Donn & Hounsell, 1997:5). There were, however, various forms of psychological support for students, as well as career counselling, study skills courses, language laboratories and academic staff development units at many of the Afrikaans-speaking HWUs (AUT, 1992:41-42).

Initially AD programmes focusing on student support were aimed at addressing the academic and social needs of students who were educationally disadvantaged. Many of these programmes were closely linked to access (NCHE, 1995:144). The structure, nature and content of these programmes varied. The initial programmes focused mainly on study skills and language improvement (reading and writing skills). Many *black* students had a negative perception of these "support" programmes, because they considered it to be a form of racial discrimination (Hunter, 1989:75).

This "deficit" model which focused on the student only, proved to be inadequate. It was not just the student that needed to change so that he/she could "fit" into the system, but it was also necessary that the institution and academic staff should change in order to accommodate a diversity of students (Scott, 1984:17,18). AD officials began to realise that an "add on" model, in which students are referred to AD staff for "remedial" work, will not solve the problem of under-preparedness, but that AD should be part of the mainstream programme (Hunter, 1991:5). Therefore AD activities were expanded to include staff and curriculum development initiatives. Academic development (AD) became an umbrella term which incorporated academic staff development, student development, curriculum development and organisational development (Moyo, Donn & Hounsell, 1997:6).

At present there are still differences in the structure of AD at South African Universities. Some AD programmes are directly concerned with access, for example the Alternative Admissions Research Project at UCT (AARP) (Agar et al., 1991:16), while others are incorporated with mainstream programmes. Programmes that aim at facilitating students' transition from school to university are called *bridging*

programmes (AUT, 1992:8). The term *bridging* takes on various forms at South African universities and does not imply only pre-first year courses as for example the Need for Education, Elevation and Development (NEED) programme at the University of the Free State (Nolte, Heyns & Venter, 1997:168) or the Test-Teach-Test (TTT) programme at the University of Natal (University of Natal, 1993:3).

The following are some examples of different forms of bridging, with the name of just one of the institutions that uses that specific format. Bridging can be in the form of a pre-first year course using reading material as well as other forms of learning (University of Natal), or separate compulsory subjects (UNISA), or additional non-compulsory tutorials (Wits) or extended first year programmes (Agar, Hofmeyr & Moulder, 1991:6; Kilfoil, 1996:205). The extended curriculum is favoured by several institutions and is sometimes referred to as a *foundation* programme. This kind of bridging is incorporated into the mainstream programme and is aimed at providing students with basic knowledge and skills that would serve as a foundation for successful study in a specific discipline (Jack, 1996:68). This type of programme as offered by the University of Stellenbosch (US) is described in more detail later on (see 5.6.2).

Most universities have special AD units but the focus and range of AD activities differ. At some institutions staff and student development activities are organised from one central unit, while at other institutions these are separated. Some universities (for example Wits and UCT) have mixed models, which implies that there is a small core of AD specialists to co-ordinate AD work in the institution, as proposed by the NCHE (1995:145), as well as educational specialists who are based in specific faculties and work mainly with academic staff in that faculty (Agar et al. 1991:6; Moyo, Donn & Hounsell, 1997:6). At the University of Stellenbosch academic staff and student development function as two separate central units. In the context of the University AD refers mainly to student development initiatives.

5.6 Academic development at the University of Stellenbosch

The very first attempts regarding the establishment of academic development programmes (ADP) at the University of Stellenbosch (US) started in 1989 when the

Faculty of Military Science approached the Institute for Language Teaching of the University of Stellenbosch (INTUS) to start an academic development programme at the faculty. At that stage some of the INTUS staff had already presented courses in the development of language ability and thinking skills for non-mother tongue speakers in several areas of industry.

The programme that was presented at the Faculty of Military Sciences stretched over a period of seven weeks and was held for a selected group of 14 *black*, *Coloured*, asian and white students who were academically under-prepared. This initiative by INTUS was taken over by members of the Defence Force, and eventually developed into the establishment of a Division for Academic Development, which was funded by the South African Defence Force.

The second ADP initiative of the University was a cadet-programme that was run by the Faculty of Engineering during 1992 and 1993. This was a year long programme for *black* students, and the purpose of the programme was to repeat the matric science and mathematics syllabi, as well as to present some language courses. This was considered to be less successful and was replaced by the new ADP programmes which were established in 1994.

The first discussions at the University of Stellenbosch regarding academic development programmes presented on campus, and aimed at students from disadvantaged areas, started in 1992. This was mainly due to the realisation especially by academic staff in the Faculty of Natural Sciences that there were students who needed additional academic support.

Six work groups were formed to investigate various aspects of academic development. Members of these workgroups visited other South African universities to learn more about their existing programmes and projects. One group, for example, visited the University of the Free State. This institution experimented with the idea of a programme at a college which would prepare students for university study and would promote articulation between higher education institutions. This was based on the same principle adopted by the United States of America when the role of the

community college was to prepare students for enrolment at a university (Pascarella & Terenzini, 1991:642). Another group investigated the programme developed by the University of Natal which was based on test-teach-test principle. From the start there had been a close liaison with the University of Cape Town, which was one of the first South African Universities to be involved in academic development programmes, especially for *black* students (CASE, 1993:29).

In the reports of all six work groups the most salient warning was that an academic development initiative should not be conceptualised as a separate add-on activity, but should as far as possible be mainstreamed. It was decided by the University to establish a separate unit, the Division for Academic Development Programmes, in 1994. This unit was fully integrated with the academic planning of the University and it still functions in close liaison with the various faculties.

A needs assessment revealed that the most serious problems with under-prepared students were experienced in the Faculties of Natural and Applied Natural Sciences, and in the Faculty of Economic and Management Sciences. Negotiations regarding extended courses in these faculties were held with the deans and planning committees of the faculties during 1994, and in January 1995 these courses started under the name *foundation programmes* (see 5.6.2).

The other initiative of the new Division for Academic Development was the establishment of a four-week bridging programme.

5.6.1 The Gencor Bridging Programme

The four-week bridging programme together with the foundation programme (see 5.6.2) are investigated in this study. The name Gencor Bridging Programme was given to the programme due to the fact that the programme was sponsored from 1995 until 1997 by Gencor, a mining company.

It must be emphasised that it was never the intention of the University to attempt to eradicate the deficiencies created by twelve years of poor schooling within a four week

programme. This is simply not possible. Neither was the purpose of the programme to prepare the students completely to ensure that they will pass the first year. The primary purpose of the Gencor Bridging Programme (GBP) was to channel students with the potential to succeed in the higher education environment by advising and directing them towards courses within their reach. The secondary purpose of the programme was to introduce the students to the rigour of academic life and to orientate them towards a lifestyle essential for their success. The idea was to introduce the students to the workload that they can expect at the University, and to demonstrate to them how they can cope with such a workload. These initial aims are still the aims of the programme.

The GBP takes place during the four weeks in January before the academic year of the University starts. The programme is based on the test-teach-test approach and group work is emphasised, especially in mathematics. The programme runs for four weeks from 08:00 to 17:00 from Monday to Friday, and during the evenings students are supposed to work together on their homework in study groups till about 21:30. The subjects taught during the programme are Afrikaans, English, Mathematics, computer literacy and study and thinking skills. Before the programme starts students write a pre-test in each of these subjects. During the course their performance is assessed on a continuous basis and they receive feedback after each assessment. This system has also been illustrated in figure 5.1. At the end of the four weeks they write a post-test in all the subjects. The advice they receive after completion of the programme regarding their field of study and eventual career choice is based on each individual's gain scores as well as on their final performance.

The students are divided into four groups, but not according to the faculties for which they have applied. Students from different courses are together in one group, and they stay in this group for the duration of the GBP. For group work in the various subjects, they are divided into smaller groups within their large group.

The selection of the students who participate in the GBP is based on their grade 11 (standard 9) results, as indicated on their application forms for access to the University. The initial selection process is as follows: the faculty secretaries approach

the director of ADP with the names of those students whom they think might benefit from the programme. These students are then invited and advised to take part in the programme, but participation remains the student's own decision.

Students are not allowed to register for a course without producing proof of matric exemption, regardless of their grade 11 results. However, in some cases the students' matric results are not yet available when they arrive for the GBP in January. If their matric results should be such that the students do not quite meet the minimum access requirements to a course, they are provisionally allowed to attend the GBP. If they demonstrate the potential to succeed, they gain access to the foundation programme of the course for which they have applied. It is explained to them beforehand that if they do not show sufficient progress during the GBP, they will not gain access to the specific course. Some of the students whose performance on the post-test is still below the acceptable norm are then advised to enrol for another course. Very few leave the University without registering for any course.

5.6.2 The Foundation Programme

The foundation programme (FP) is a faculty based programme that aims at assisting students to master the basic knowledge and skills which should enable them to succeed in programmes offered in the specific discipline housed in that faculty. The FP involves an extended curriculum which implies that students who follow the programme successfully, will take a year longer to graduate. In three of the four faculty groupings under investigation the first academic year is extended over two historic years. In the fourth faculty, Engineering, the first two academic years are extended over three years.

Based on their GBP post-test results some students are advised to follow the foundation programme. However, students who performed well enough to move directly into the mainstream after the GBP may also take part in the FP if they choose to do so. Students who did not take part in the GBP but enrolled directly into the mainstream on entering the University may change to the FP, provided that they do so before the end of March.

During their first historic year students follow a reduced number of first year mainstream modules coupled with various forms of additional assistance. The FP is a combination of mainstream, preparatory and parallel support modules supplemented by tutor help. Neither the preparatory nor the support modules are credit bearing - except for a few modules which carry one or two credits each. The mainstream modules carry exactly the same number of credits as in the mainstream course. FP students also attend the same classes as their mainstream peers.

The preparatory modules (for example Physics preparatory) are offered before the mainstream module. Once the student starts the mainstream module more individualised support is offered. All preparatory and support modules are terminated after the first historic year. During the following year students follow the remainder of first year academic modules without any additional support modules or official academic assistance as part of the FP.

Apart from AD tutors who provide academic as well as emotional support to students, there is also a mentor programme. Senior students who participated in the GBP or FP act as mentors for first year students. The mentors also support each other and try to arrange contact and support among other senior students who participated in the AD programmes during their first year.

The impact of the GBP and the FP is investigated in this study. The empirical research will be described in the next chapter.

CHAPTER 6
THE EMPIRICAL INVESTIGATION

6.1 Introduction

The South African school system does not prepare all students equally well for higher education. Consequently many potentially successful students either do not enter the higher education environment, or drop out of the system without obtaining a qualification. This implies not only that potentially high level manpower is lost to the country, but also has financial implications for higher education institutions, the government and all stakeholders who subsidise higher education.

However, the problem of under-prepared students, especially those with sufficient potential but insufficient school preparation, is not unique to South Africa. The massification of higher education all over the world opened the doors of the ivory towers of the traditional élitist system to individuals from underprivileged communities who were previously barred from entering the higher education environment. The widening of access caused changes in the size and composition of student populations on campuses all over the world. This heterogeneous character of modern student populations poses its own set of problems and challenges to educators and managers of higher education. The most important of these are probably to maintain a high standard of education while accommodating more students with diverse backgrounds, different values and often disparate levels of academic preparedness. Another important challenge is to manage the diversity and increased number of students in a cost effective way. To meet these challenges, the higher education system has had to change its traditional approach and adopt new management, teaching and student support strategies.

Two of the mechanisms which have been employed to cope with the diversity in students' academic preparedness, are academic staff and student development. Although the nature of the activities and strategies which accompany the development actions differ, the purpose of these actions is the same, namely to empower both students and academic staff to cope with the diversity on campus. Academic

development became as much a part of the higher education system of the 1990s as the appropriation of study bursaries and loans used to be during the 1960s.

As stated before, the University of Stellenbosch introduced academic development programmes (ADP) in 1994 (see 5.4). The aim of this study is to investigate one of these programmes, namely the Gencor Bridging Programme (GBP). The GBP is a four-week programme for students who have applied for access to courses in the Natural, Applied Natural, as well as the Economic and Management sciences. Some attention will also be given to another academic development programme of the University, namely the foundation programme for first year students. This programme acts as a follow-up programme for the GBP, but is also available for other students who do not want to move directly into a mainstream course.

The expectation of the University from ADP initiatives, and especially the GBP, was not to eradicate the inequality in academic preparedness, but rather to assess students' potential and level of development, in order to advise and direct them in choosing appropriate courses. The aim was to identify students who, with additional support and developmental activities, could potentially be successful in the more demanding disciplines, such as engineering, medicine, chemistry, physics, and financial accountancy. Although the content of many of the activities during the initial four week GBP includes material which should have been covered during the students' school years, the University has no illusion about the possibility of learning in only four weeks what is lacking, after twelve years of formal schooling. The intention is, however, to try to establish how much basic knowledge, if any, is lacking, and what the level of academic preparedness of each of these participating students is. By establishing the academic needs of students, developmental activities which might raise the students' chances of success can be planned more purposefully, which will probably make the whole ADP initiative more beneficial to both the students and the University.

6.2 Purpose of the investigation

Although the performance and progress of the students who have taken part in all forms of ADP are monitored carefully, and several evaluation strategies have been

employed to supply estimates of the effectiveness of these programmes, very little longer term scientific research and comparative studies on the programmes' overall influence on students' performance in relation to that of their peers have been conducted. The purpose of this study is to add to the existing data about these programmes, and to be a further step in fulfilling the need for scientific information about the effectiveness of ADP, and specifically of the four week GBP and FP, at the University of Stellenbosch.

6.3 The subjects of the investigation

The subjects who took part in this investigation were divided into two groups, namely GBP and mainstream students who entered the University of Stellenbosch during the period 1995-1997. Each group was sub-divided into various smaller groups (see 6.5.1). Students who were the subjects in the experimental group could, at the time of the investigation, historically have been in their second, third or fourth year of study. However, the actual study year to which each individual might have progressed in his or her course could vary between being the first and fourth year, while some students had already obtained a three year degree.

Since the sponsors of the Gencor Bridging Programme (GBP) specified that the beneficiaries of their investment should be students from educationally disadvantaged communities, all students participating in this specific programme are non-traditional students, originating from schools in disadvantaged areas in South Africa, Namibia or other Southern African Development Countries (SADEC). This programme was also designed to focus on students who applied for access to specific courses. The disciplines included in this study are housed in the Faculties of Natural Sciences, Agricultural Sciences, Forestry, Engineering, Economic and Management Sciences and the Medical and Dental Faculties of the University of Stellenbosch.

The second section of the target population consisted of a group of students who were of similar educational background to the ADP students, but who went directly into the mainstream courses of the same disciplines for which the ADP students were enrolled. The exact number of students used in each group is mentioned during the more detailed descriptions of the quantitative and qualitative research approaches

respectively (see 6.5, 6.6).

6.4 Research strategy

The research phase of this study involved two kinds of research approach, namely a quantitative as well as a qualitative approach. This two-pronged approach was followed because of the nature of the information that was necessary for the study. The available data sources that could be used to obtain meaningful results were different kinds of records of quantitative indications of student performance. These records would, however, not have yielded any information regarding the factors which might influence either good or poor performance. To gather information about the determinants of performance, that is, to identify relevant factors as well as to be able to determine the nature of the effect of these factors, another type of data source was needed. For this purpose some of the students whose performance was monitored quantitatively were used as a qualitative data source.

The possibility of using lecturers as another source of qualitative data, was also considered. However, a pilot study done by electronic mail showed that only one of the ten lecturers who were approached could identify the ADP students in his/her classes without being given the names of these students. The benefit of these students being treated as unidentified, and thus as non-stereotyped, individuals in mainstream classes is too valuable to risk jeopardising the overall aim of establishing a culture of support without any stigma attached to it, for the sake of gathering additional data. Making the lecturers aware of the ADP students as a separate group could possibly have resulted in these students subconsciously being labelled as different. The possibility of using lecturers as a data source was therefore discarded.

Although the two approaches will be discussed separately, the activities involved in each approach could not be allocated to a separate time frame. They often had to take place simultaneously, for several reasons. One reason was the time intervals at which the quantitative data about the subjects' progress became available. The other reasons were largely due to the inherent nature of any qualitative research process that demands a constant movement between the data collection and data analysis activities.

Returning to the field after some data has been analysed is part of the process. More specific to this study was the fact that the same subjects were involved in both the qualitative and quantitative research, and the interdependence of the various kinds of information gathered, which often determined the time scheduling of data collection activities. For example, some stages of the research activities necessary for the qualitative research were dependent on the completion of a specific stage in the quantitative research process. The two approaches will be discussed in more detail further on (see 6.5, 6.6). It is therefore sufficient to state here that existing University of Stellenbosch (US) documents were used to gather quantitative data, while the perceptions of students who took part in the GBP, as well as some in the foundation programmes of the selected faculties, provided the qualitative research data. Since the further discussion deals to a large extent with a specific group of ADP students, namely those who participated in the Gencor Bridging Programme (GBP), the distinction will be made when referring to these students, by calling them *GBP students*, instead of the well-known term, *ADP students*. This latter term will be used when referring to students who had participated in any kind of formal academic development programme organised by the University.

6.4.1 Time of the empirical research

The empirical research was conducted during the first ten months of 1998. Although the actual period of data recording for the quantitative research stretched over three years (1995-1997), the investigation of the information on the documents took place during 1998. Data collection for the qualitative research (interviews and focus group sessions) took place during the second and third terms of the same year.

6.4.2 Research approach

As stated before, a two-pronged research approach was followed, which included both quantitative and qualitative methods. The first stage of the research, during which existing student records were scrutinised, provided both the data for the quantitative research and the information upon which decisions about the selection of subjects for the qualitative research was based.

6.5 Quantitative research

The quantitative research process involved students who had participated in the Gencor Bridging Programme (GBP) during the period 1995-1997, as well as other historically disadvantaged students who attended schools similar to those of the GBP students who entered the mainstream of courses at the University of Stellenbosch (US) directly, during the period 1995-1997. Figure 6.1 illustrates the process.

6.5.1 The quantitative research process

All data for the quantitative research was retrieved from existing US records (see 6.5.3). The first step in the process was to identify the students who participated in the GBP over the three year period. These students were enrolled in seven faculties in total, but with very few students in some of these faculties, for example Forestry and Agriculture. To be able to work with viable numbers, as well as to facilitate the research process, related faculties were grouped together. The end result was that each student was categorised into a group within his/her year-of-entrance grouping, which was sub-divided into four groups, combining the faculties as follows:

- Group 1 - Faculties of Natural Sciences, Forestry, and Agricultural Sciences
- Group 2 - Faculty of Economic and Management sciences
- Group 3 - Faculties of Medicine and Dentistry
- Group 4 - Faculty of Engineering

This implies that there were at this stage actually four times three groups of GBP participants, namely four groups for 1995, and four groups each for 1996 and 1997.

The second stage of the process was to identify the schools from which these GBP-students originated. Other students from the same schools who had also enrolled for courses in any of the seven faculties mentioned above, during the same three-year period at the University of Stellenbosch, were selected. These students did not participate in the GBP, but went straight into the mainstream courses. These students were also divided into the four groups. Like the GBP students, also keeping the year of their first enrolment as their original year-grouping. There were also four times three groups for the mainstream students. During this and all further stages of data

collection, the mainstream and GBP students were dealt with separately.

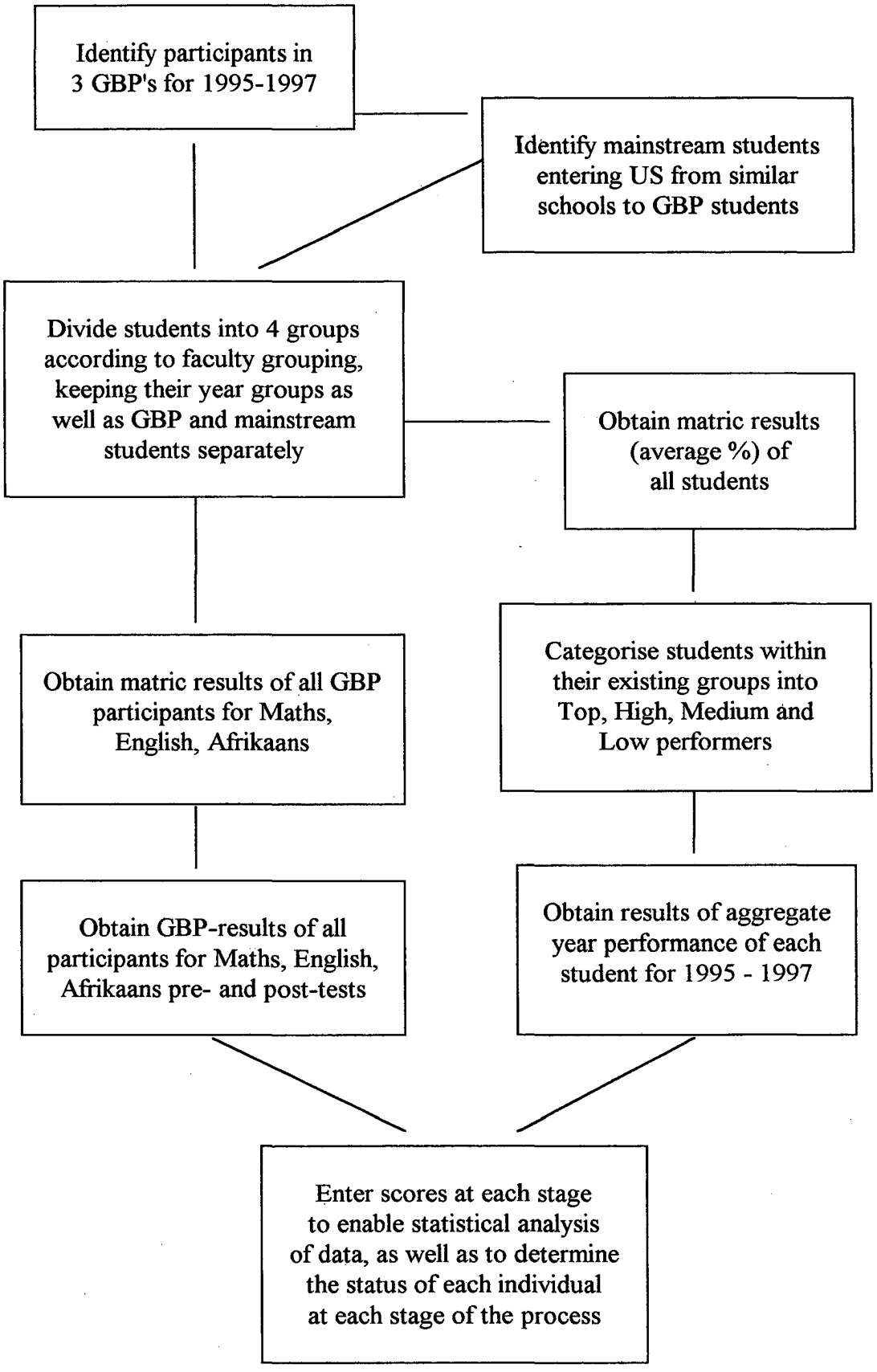


Fig. 6.1 Flowchart of data collection process for quantitative research

It is important to note that the selection process of mainstream students was designed to make a valid comparative study, with a representative control group, possible. The selection process could, however, not be executed strictly according to the planned procedures. The reason for the deviation was that in many cases it was not possible to select the same number of students from a specific school who had enrolled for a course in the same faculty as their GBP peers, during the same year. In order to work with a number of mainstream students in the control group, at least equal to that in the experimental GBP group of students, other students from schools in the same geographical area, serving similar communities, were selected. Although the control group now consisted of students enrolled during the same year in similar courses, there is no definite guarantee that the schooling that the subjects in the experimental and control groups have undergone was of the same quality, whether good or poor. The comparison between the performances of the two groups of students could thus not be made to prove the effect of the GBP and FP unless the possible differences between the groups were taken into account. This has been done statistically by using the matric results as a co-variate (see 6.5.5).

During the third stage of the quantitative data collection process the average matric result of all students, both GBP and mainstream, was obtained from the student records. Each student was classified in a top, high medium, or low category, according to his/her level of performance in the final matric examination. Because of the difference in the minimum requirements to pass matric (40%) and to pass a course at the University (50%), it was difficult to decide on the range of each of the four categories. To keep at least the highest category similar to the University's cum laude classification, and because not many students in the very low 40% - 50% (F) school category would probably be selected to enrol for a course in one of the seven faculties dealt with in this study, it was decided to allow a wider range for the lowest category. This made it still possible to include the F-candidates who might have applied for access to the University, and whose applications were successful.

The range for each of the four categories for the classification of students according to their matric results, was as follows:

- Top: 75% +
- High: 65% - 74%
- Medium 55% - 64%
- Low 40% - 54%

(The range for the *low* category changed at further classifications during later stages of the data collection process).

This initial classification of students according to their matric results is maintained throughout the process, as each individual's criterion against which all changes in performance are evaluated as either an improvement or deterioration in expected performance.

During the next stage of the quantitative data collection process the treatment of GBP and mainstream students was again similar. The aggregate year performance during each specific academic year was obtained for each individual student in both groups. This year mark is calculated by using a specific formula which takes both the weight of each course subject, as well as the student's performance in that specific subject, into account. The weight is indicated by the number of credits which a student would earn by passing the subject, and the performance is indicated by a single assessment score. This performance mark for each subject is multiplied by the number of credits allocated to the specific subject, and the results summed. The total is then divided by the sum of all the credits of subjects followed during that year. Even if students failed or discontinued a subject during the course of the year, the credits for that subject would still form part of the calculation of the final year mark.

An additional set of data was collected for the GBP students, namely the results of their performance in Afrikaans, English and Mathematics, recorded at three different assessment events. The first score was obtained from each student's results during the final matric examination in these three subjects, while the second and third scores were taken from each student's performance on the pre- and post-tests in these subjects at the beginning and end of the four week GBP period, respectively.

After the quantitative data collection process was completed, the number and nature of

scores obtained for each student, were as follows:

For all students:

- a matric average, and a year mark for each historic year of study, that is for students who entered the US in 1995, four scores each (matric, plus years 1, 2 and 3 at the US), for students who entered in 1996, three scores each (matric plus years 1 and 2 at the US), and for students who entered in 1997, two scores each (matric plus year 1 at the US).

For GBP students only (all GBP students - irrespective of whether they continued in the mainstream or particpated in the FP):

- all of the above;
- three scores (matric, pre-test, post-test) per subject for Afrikaans, English and Maths
- two scores (pre-test average, post-test average) for Afrikaans, English, and Maths related to the GBP only.

At this stage of the data collection the GBP students were divided into two sub-groups, namely those who moved into the mainstream (GBP-MS) after the GBP and those who participated in the FP (GBP-FP). The GBP-FP students need an additional year to graduate and therefore their academic year level is always one year behind that of both the GBP-MS group and their mainstream (MS) peers. In order to compare the academic performance of the different groups at the same academic year level it was necessary to calculate the 1998 year mark of the GBP-FP students. Therefore the final scores obtained for this group were as follows:

For GBP-FP students only:

- all scores obtained for the GBP group
- an additional year mark for the fourth historic year of study. The scores for the different year groups were: for students who entered the US in 1995, five scores each (matric, plus years 1, 2, 3 and 4 at the US), for students who entered in 1996, four scores each (matric plus years 1, 3 and 3 at the US), and for students who entered in 1997, three scores each (matric plus year 1 and 2 at the US).

At each point in time, each student was again classified into a specific performance category according to his/her performance at that stage. Figure 6.2 illustrates the difference in the classification structures for matric scores and for all other scores. The categories, as indicated in figure 6.2, for top (T), high (H) and medium (M) performance stayed the same as for the classification of the matric results, but the *low (L)* category changed. The upper margin of this category stayed the same at 54%, but the lower margin changed to 50%. Three additional categories were added, namely very low (VL) for any score lower than 50%, a drop-out (d) category for any student who discontinued his/her studies and left the University for whatever reason, and a change (c) category for any student who discontinued the course for which he/she initially enrolled, to follow another course at the University of Stellenbosch in a faculty other than one of the seven included in this study.

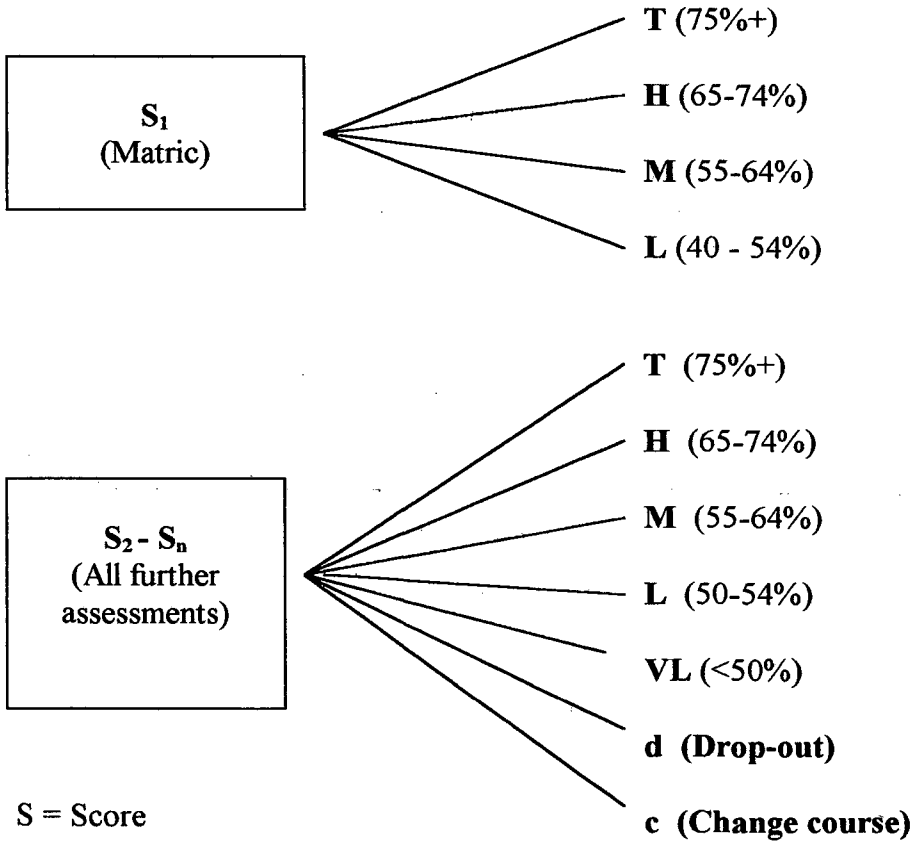


Fig. 6.2 *Classification structure for matric and all further assessment scores*

6.5.2 Number of students in each year group.

The total number of 224 GBP and 422 mainstream (MS) students as divided into the three year groups, per faculty grouping, is indicated in table 6.1. The GBP group include both sub-groups (GBP-FP and GBP-MS) and the mainstream group include only those mainstream students who went directly into the mainstream without participating in any academic development programme (ADP).

Table 6.1: Number of GBP students involved in each year group per faculty grouping

	BSc, Forestry & B.Agric			**Economic & Management**			**Medical & Dental**			**Engineering**		
	95	**96**	**97**	**95**	**96**	**97**	**95**	**96**	**97**	**95**	**96**	**97**
GBP Students	41	34	23	36	25	12	0	7	16	7	13	10
MS students	70	39	60	51	46	54	0	36	36	14	10	6

6.5.3 Data sources for quantitative research

Different sets of data sources were used for the quantitative component of the research, namely several sets of records of GBP students' performance related to the four week Gencor Bridging Programme, as well as the standard records of academic progress kept by the University for all students.

6.5.3.1 Records related to the Gencor Bridging Programme

The GBP is based on a continuous teaching, evaluation and feedback (test-teach-test) principle. The performance of all students participating in the four week programme is monitored and recorded at every assessment phase in the programme. There are pre-tests and post-tests in all the subjects offered during the GBP, as well as varying numbers of tests in-between. The records of all these results are kept by the Division for Academic Development Programmes.

There are also records of the GBP students' progress after the four week programme. This information is extracted from the main database of the University, processed and maintained by non-ADP staff, but under the auspices of the Division. Two sets of these records for the 1996 and 1997 groups, and one set for the 1995 group of GBP

students were obtained. The first set of records for the 1996 and 1997 groups were, although incomplete, available during the second semester of 1997, and the rest of these records during the second semester of 1998. All available records related to the GBPs of 1995, 1996 and 1997 were consulted. Apart from these, the standard academic records of all GBP students were also used.

6.5.3.2 Academic records of performance during study years

These records were extracted from the central database of the University. Although the information on the academic records indicated students' progress till February 1998, the actual period of time covered by these records, and the progress made towards obtaining a qualification, depended on each individual student's time of entry, academic route and performance. For the group of mainstream students involved in this study, the standard academic record of each student, kept by the University, was the only data source.

These academic records indicate the results of all the subjects presented during the final matriculation examination, as well as the final average mark achieved by the student, for all these subjects. Regarding the student's progress at the University, the following information is indicated on the academic record:

- the course for which the student is registered for that specific year;
- the number and names of subjects followed every year;
- the credits attached to each subject for the specific course during each year;
- the performance score of the student on each subject;
- the minimum number of SAPSE credits required for the specific year;
- the actual number of SAPSE credits acquired for the specific year;
- the total number of SAPSE credits required in order to be promoted to the next year level of the course;
- the total number of SAPSE credits accumulated by the student to date.

What is *not* indicated on these academic records, and which would have been useful information for this study, are the following items:

- the grade 11 (standard 9) results of students, which determine whether their

application for study at the University is accepted or not, that is, their actual key to access to the University

- the aggregate year mark of the student for each of the study years;
- the SAPSE credits required and gained during each previous year of study.

The aggregate year mark, which was available for most of the GBP students from the records of progress maintained by the Division for ADP, had to be calculated for all mainstream students for each year of study, according to the formula explained during the fourth stage of the data collection process (see 6.5.1).

6.5.5 Statistical analysis of the data

The statistical analysis of the data was performed in two phases, each with two sub-sections involving different analyses of the groups. A detailed explanation of the analysis of each sub-section of the two phases is given with the results in chapter 8. During the first phase, only frequencies were considered to make comparisons between students' matric results and their performance at University during each year of study.

During the second phase of the analysis two kinds of statistical test were used, namely a two- and three-way analysis of variance (ANOVA) (in both sub-sections) and a Wilcoxon matched pairs test (in the first sub-section only). To compare the students' matric and GBP performance respectively a two-way ANOVA and the Wilcoxon matched pairs test were used (see 8.6).

In the first subsection a separate three-way ANOVA was performed on the data sets of each of the GBP and mainstream year groups 1995 and 1996, and a two-way ANOVA on the 1997 data sets. This was done to establish the effect of factors that influence students' performance during their study years. The three factors that were identified during the first phase of the statistical analysis and which were tested here were the faculty at which the students were enrolled, participation in the GBP, and the year-level. *Historic* year levels were compared.

In the second subsection of phase two only the data sets of the GBP-FP and

mainstream (MS) groups were used. The *academic* first, second and third year-levels were used as independent variables in separate analyses to test the effect of two factors on students' performance during each academic year. The two factors were firstly, the faculty in which students were enrolled, and secondly, the programme (GBP-FP or MS) they were following.

During the statistical analyses matric performance was used as co-variate. This was done to compensate for the fact that students in the total GBP group, and thus also the GBP-FP group, could not be matched on matric performance by a MS group. The most common use of co-variates is in between-groups designs, in cases when one group has continuous variables that are likely to be correlated with the dependent variable of interest. Large differences in an uncontrollable variable (in this case matric performance) might contribute a lot of random variability to the dependent measure (in this case performance during study years). This variability may be so large that it will "mask" the differential effectiveness of the two kinds of programme that the two groups follow (in this case the GBP and extended curriculum (FP) or not GBP and mainstream). By specifying the uncontrollable variable measure (matric performance results) as the co-variate, the error variance may be reduced significantly (Montgomery, 1997:149).

6.5.6 Problems experienced during the quantitative research phase

There were two main categories of problems experienced during this phase of the research. Firstly, problems related to the data sources, and secondly problems related to the selection of mainstream students.

The fact that the information about the GBP students on the different sets of records did not always correspond, was a serious problem. It was very time consuming to have to consult both people and records to sort out which scores represented the correct results of the students concerned. A further problem with the data sources was the absence of the year mark on the academic records of mainstream students. Calculating these scores was also very time consuming. Since the final set of GBP information became available at such a late stage, the time pressure regarding the processing of the data became a factor. Although the required year mark information exists on the

central database of the University, the process of extracting this information would have slowed down the data collection process even further. Therefore calculating the year mark, though time consuming, was the only viable option within the limited time available.

This completes the description of the quantitative research component of this study. The second part of the chapter consists of an explanation of the qualitative research, and the reason why this approach was used. The selection of candidates, the data collection methods, the construction of the interview guide, and some of the problems experienced are the main aspects dealt with in the following discussion.

6.6 Qualitative research

The validity of student perceptions as a basis for decision-making in higher education, especially regarding the process of course and teacher evaluation by students, remains a controversial issue in higher education circles world-wide (Stringer & Finlay, 1993:95). Furthermore the danger of subjectivity, to which a qualitative research approach is particularly vulnerable, creates serious concern about the validity of qualitative research methods (Miles & Huberman, 1994:16). In spite of this, a qualitative research approach which uses student perceptions of, inter alia, several courses to which these students had been exposed, is employed in this study. The justification of the decision to follow this approach is explained by the following discussion.

6.6.1 Rationale for qualitative research

The reservations of academic staff about the use of student perceptions to assess courses are partly justified. However, in spite of the scepticism surrounding this issue, the value of student perceptions as one component of a total strategy of course assessment, provided that it is used correctly, has been underwritten by extensive research (Stringer & Finlay 1993:93). Student perceptions are used in this study as an indication of how the students experience the courses, and not as an absolute measure of the quality of the particular courses.

Scientific methods of conducting qualitative research had been developed gradually since the late nineteenth century, but became popular in American sociology between 1910 and 1940 (Taylor & Bogdan, 1998:5). This research approach has gained credibility through the pioneering work of researchers such as, inter alia, Florian Znaniecki (Analytical Induction) and after the Second World War, Becker and Greer (Coding) and Glaser and Strauss (Grounded theory) (Taylor & Bogdan, 1998:136,137), as well as the modern day qualitative analysts who carefully document the whole qualitative research process, and verify their conclusions. Since the 1960s qualitative research has been used more widely, and has become a valid scientific research paradigm with sophisticated computer software packages for the processing and analysis of qualitative data (Miles & Huberman, 1994:1,2).

One of the main differences between this research approach and a quantitative approach, is that it does not start out with a theory and definite hypotheses which are to be proved true or false in order to accept or reject or modify the initial theory. In qualitative research, there is no initial theory nor any definite hypotheses. The theory emerges from the data (Miles & Huberman, 1994:12). For this reason it is a useful approach to exploring a new research area where no theory yet exists. It is also an appropriate approach for gathering information which is difficult or impossible to quantify, or for fieldwork in areas which have not previously been explored by means of surveys in which operationalised constructs have been used to represent abstract concepts. The present study contains elements of all these conditions.

Although it is possible to speculate about the reasons why students perform as they do, the need exists to gather information which might reveal the real causes of failure or success. This implies exploring non-cognitive factors, which are difficult or impossible to quantify. Since the establishment of formal ADP at the University of Stellenbosch has happened fairly recently (see 5.4), very little scientific research has been conducted to establish the influence of non-cognitive factors on the academic performance of first-generation students. Therefore, no theory exists which is directly related to, or definitely fits, the specific circumstances. Furthermore, it was necessary to get beyond the surface of the information that would be revealed by the quantitative research component of this study. For these reasons, a qualitative research approach is

considered to be justified in this investigation. How the research was conducted, will now be explained.

6.6.2 Selection of data sources

In order to be able to gather relevant information, appropriate data sources had to be identified. Three possible sources were identified, namely the GBP students, their family members - especially parents, and lecturers at the US who have regular academic contact with these students. After some exploration and subsequent practical consideration, only the GBP students were used. The other two possible data sources were not consulted, for several reasons.

The GBP students originated from different areas in South Africa, Namibia and other SADEC countries. To be able to interview a representative selection of parents would have been costly. Because of the legitimacy of using a relatively small number of cases in qualitative research (Miles & Huberman, 1994:36), due to the focus on the depth of information rather than the breadth, selecting these few cases from areas in and around Stellenbosch would have implied a built-in bias in the data collection process. Not only would there probably have been a difference between the daily circumstances and attitudes of parents from urban and rural areas, but the possibility that some parents would have been exposed to higher education, was larger for parents from urban areas than for parents from rural areas. Another factor which would probably have contaminated the data was that those parents who were difficult to trace, because their addresses did not appear as biographical information on their children's student records, would probably have had very different circumstances and attitudes from other parents with fixed addresses, and contactable telephone numbers. Although the sampling requirements in qualitative research are more purposive than random (Miles & Huberman, 1994:36) the parents who could have been selected for interviews would not have been representative cases, and therefore parents were not used as a possible data source. As was explained during the general discussion of the research strategy (see 6.4), it was also decided not to include the lecturers as a data source. The only remaining data source was the GBP students. This allowed more time for a wider selection of cases within the various groupings of GBP students.

6.6.2.1 Selection of cases

Since the GBP students were already divided into several groupings according to their average matric results, it was decided to use stratified sampling from these groupings within each faculty grouping, and per year group, to ensure that the cases selected for interviewing covered the whole spectrum of GBP students. The numbers in each group are illustrated by table 6.2.

Since all students who attended the GBP were included in the initial classification according to the matric results, it was expected that some of those selected would probably not have been in the system anymore. For this reason, the sample was larger than the actual number of cases needed. No sample was drawn from the lowest category, because in total this was not a large group, and it was possible that many of these students could already have dropped out of the system. If there was just one student in a category, for example in the 95 medium group in Engineering, this student was selected. The total number of students selected was 57, which was, intentionally, greater than the number of participants who would probably have been used during data collection. The distribution of these 57 students per faculty grouping, including all three year groups, was 21 (Natural Sciences), 16 (Economic and Management sciences), 12 (Medicine and Dentistry), and 8 (Engineering).

Table 6.2: Grouping of GBP students and results of stratified sampling

Classification (Matric)	**B.Sc. Forestry & B.Sc. Agric**			**Economic & Management**			**Medical & Dental**			**Engineering**		
	95	**96**	**97**	**95**	**96**	**97**	**95**	**96**	**97**	**95**	**96**	**97**
Top & High	14	14	27	1	22	14	0	13	25	6	10	9
Sample T & H	3	3	5	1	5	3	0	3	5	1	2	2
Medium	13	21	21	12	18	11	0	16	4	1	2	2
Sample M	2	4	4	2	3	2	0	3	1	1	1	1
Low	3	6	4	6	12	1	0	0	3	0	0	0
Sample L	-	-	-	-	-	-	-	-	-	-	-	-

The division of the sample into candidates for interviews and focus group sessions, respectively, was not pre-determined. The exact procedures that were followed to contact and meet with the students will be discussed in a following section, together with the explanation of the methods that were used to collect the data (see 6.6.4).

6.6.3 Construction of the interview guide

The same interview guide was used for the focus groups and for the interviews. Because the initial format of this guide included very general questions, it stayed the same throughout, but the probes that accompanied it, changed considerably. Some definite probes were planned, in case the information offered by the participants did not cover a sufficiently wide area. The areas of interest are summarised in table 6.3.

Table 6.3 Factors affecting students' academic progress

Institutional	ADP (GBP & Foundation)	Academic activities	Social	Personal
University culture (e.g. Traditions and language)	Knowledge gained	Workload	Having friends on campus	Financial
University climate (Atmosphere on campus)	Backlogs addressed	Independent study	Feeling part of a social group	Accommodation
University policy	Skills developed	Self-discipline	Relationships	Home environment
Size of own group on campus	Making friends	Methods of instruction	Feeling comfortable about mixing with so many different people	Family
	Introduction to university life	Language medium	Racial tensions	Health
	Support during programme	Own study methods	Social self-image	Level of motivation
	Encouragement to persevere	Coping with academic tasks		Work ethic
	Support after programme	Feelings of success/failure		Time management
		Academic self-image		Intention to persist
		Comparison with peers		
		Sharing ideas about work outside class		
		Staff-student relationships		

From the information in table 6.3 it can be seen that, although there was no definite

theory or hypothesis behind the planning of the data collection, the research literature about the reasons for success and drop-out in the higher education context influenced the planning of the interview guide and especially the probes. Many of the items in each of the five categories in this table could just as well have fitted into another category. This emphasises the reciprocal nature of the various factors which influence students' success in the higher education environment, and show how entwined these factors are. The items listed here are not the only possible factors in each category, but were chosen for their assumed influence on the success of GBP students.

Most of the factors mentioned in table 6.3 were discussed in more detail in chapter 2, therefore only a few factors, and how they are inter-linked, are mentioned again. Some of the factors most closely linked to the student's decision to either persist or drop out are, firstly, the role of the institutional culture and climate on the integration of non-traditional students, and the role of integration in persistence; secondly, the effect of the student's academic and social self-image on integration; thirdly, the student's motivational orientation on his perception of failure and the consequent effect on the academic self-image, and lastly the effect of family support on the student's motivation and persistence.

The information that was considered necessary for this study had to be simplified to a more accessible level for the interview guide. It was finally reduced and divided into three sections, as illustrated in Figure 6.3.

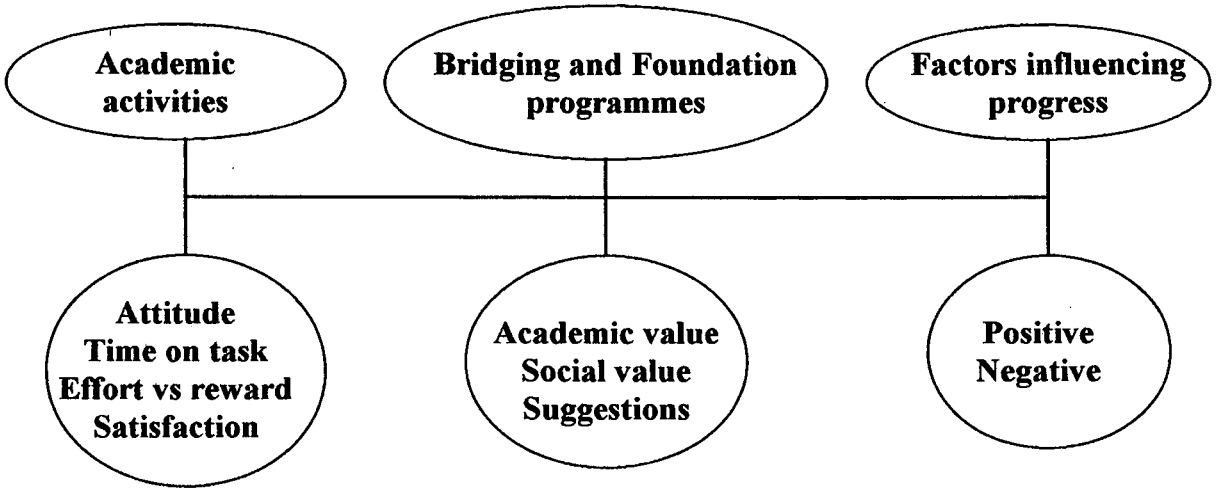


Fig 6.3: Basis for selection of items for interview guide

The interconnectedness of all the components in this diagramme is important. It was assumed that the bridging and foundation programmes would influence both the academic activities of the students, and their perception of the factors that would affect their academic progress. It was also expected that there would be some overlap in the responses to the questions about the academic activities and the factors influencing progress. The four items selected under academic activities were considered the key aspects of successful learning either during a contact session or out of class. These were the student's attitude towards his/her studies, the total teaching and learning hours spent (time on task), the student's perception of the reward for the extent and quality of effort put into a task, and the student's general satisfaction with all aspects of academic activities.

The assumptions regarding the bridging and foundation programmes were that the students who participated in these programmes would have gained academically from them, that is, that they would have been introduced to the rigour of the higher education academic environment, and have applied and developed some of the study and thinking skills to which they were exposed during the programmes.

Initially the information in table 6.3 was to be used as probes during interviews. However, the specific nature of these probes was found to direct the conversation too much, and stifle students' spontaneous reactions. Therefore, these probes were only used during the first two interviews. Thereafter, apart from probing to elicit more information about something a student had mentioned, just a few general questions were used as additional probes, where necessary. These were for example: Does anything about the University bother you? Is your family interested in your studies? Are the majority of your friends on campus or at home? If students lived off campus, they were asked how they spent their time between classes, and whether the time spent travelling affected them.

How the interviews and focus groups were planned, set up and actually conducted, will be discussed in more detail in the following section.

6.6.4 Data collection methods

The qualitative research component of this study was planned to consist of two methods, namely interviews and focus groups. It was decided to use both these methods, in order to obtain as much information as possible. This would also serve as a form of triangulation (see 6.6.5.2), and would probably accommodate different preferences for sharing information that students might have. The reasoning behind this was that, given the fact that all contributions would be treated confidentially, some students might feel that talking in a group cannot be considered confidential. On the other hand, some students might find it easier to talk in a group. One of the benefits of group discussions, and also of focus groups, is that the presence of other people in the group stimulates a richer conversation because of the larger pool of ideas (Krueger, 1994:17). The planning and actual use of these two methods in this investigation differed slightly, as will be seen from the further discussion.

6.6.4.1 Arranging meetings with participants

This part of the data collection process was more problematic than expected. After the participants had been selected (see 6.6.2.1), a first attempt was made in May 1998 to contact them by telephone. The Economic and Management Science group was the first to be contacted. Telephone numbers for 11 of the 16 selected students could be traced, two numbers from the biographical information on the students' records, and the other nine from their parents' addresses in the telephone directory. Of these, six numbers were either wrong, or did not exist any more. Parents who answered the telephone were very suspicious about a request to speak to their student son or daughter, even after the reason for the request was explained. Some of them said that the student did not live there any more. Eventually it was possible to speak to only eight students by telephone, of whom three had left the University. A focus group session was arranged with the other five students, during lunch time two days later. To encourage them to attend, they were assured that refreshments would be supplied.

The meeting was set up in one of the departments at which these students regularly attend classes, to make sure that they would not experience any problems in finding the venue. In spite of a reminder, only two turned up for the focus group session.

Because the focus group could not be held with only two participants, the students were requested to stay for individual interviews. After the interview with the first student, the second student had gone, and did not return at the time which had been agreed upon for the second interview. Another group meeting was arranged with the four students who had not yet been interviewed. Once again they did not turn up. After that, with all further focus group appointments, whoever turned up was interviewed, either individually or in mini-groups of two or three.

It was decided that telephonic contact was not a viable option. The remainder of the students were contacted either by electronic mail, or by messages to their residences, and a request to phone or e-mail back, while others were contacted with the assistance of lecturers. This last option was the least desirable, because it was feared that it could create a feeling of obligation. This might have made the promise of confidentiality dubious, thus stifling the students' spontaneity. Fortunately, having been requested by a lecturer to attend a group discussion, did not affect the participants' frankness, but some students still did not turn up for the appointments.

Everything possible was done to ensure that the students would keep their appointments. All meetings were set up in buildings where the students regularly have to attend classes, so that they would be familiar with the surroundings. A time schedule of possible meeting times was drawn up, and students could choose the time that was most convenient to each of them. This schedule coincided with the normal class roster of the University, so that students could attend meetings in-between classes, and did not have to travel to the University specially for a meeting. They also did not have to sacrifice a lunch time. They could also state their preference regarding taking part in an individual interview or in group discussion, and every student's preference was honoured.

All the interviews were conducted between May and October 1998, and all were audio-taped, with the permission of the participants. No names were mentioned on the tapes, and the confidentiality of the information and its source, was emphasised. In the end, a total of 27 students took part in the research. The distribution over the faculties and performance categories is shown in table 6.4. No students from the Faculty of

Agricultural Sciences took part, but this is a very small group, and because of the similarity in their subjects with that of the Natural Sciences and Forestry students, this was not considered a problem. Only M&D students on the Tygerberg campus were interviewed, therefore no 1997 M&D students were approached to participate. It was necessary to get some information about students' perception of the transition between the first and second academic year together with the transition to another campus. Because the GBP-FP group at Tygerberg was so small and they were from their second academic year not on the main campus any more, where all the other interviewees were, five FP-only M&D students were approached to participate in the focus group. These five students were all in the top or high categories according to their matric results. They did not participate in the four-week GBP but followed the extended curriculum route and thus were with the GBP-FP group during their first academic year on the main campus. Unfortunately, only one group interview was conducted which could be considered as meeting the requirements of a focus group interview regarding the minimum number of participants, namely five people. This interview was with a group of 8 M&D students - including the five FP-only students.

Table 6.4: Distribution of interviewees across faculties and performance categories

	1995				1996				1997				Total
	T	H	M	L	T	H	M	L	T	H	M	L	
Nat*	-	3	2	3	-	4	3	-	1	3	4	-	23
Nat-S	-	1	1	1	-	-	1	-	1		1	-	7
E&B*	-	-	3	-	-	-	1	2	1	3	1	-	11
E&B-S	-	-	2	-	-	-	-	1	-	1	-	-	4
M&D*	n/a	n/a	n/a	n/a	1	3	1	-	5	1	1	-	12
M&D-S	n/a	n/a	n/a	n/a	1	3	1	-	-	-	-	-	10
Eng*	1	2	-	-	3	2	1	-	2	1	2	-	14
Eng-S	-	1	-	-	2	-	1	-	-	1	1-	-	6

* Number of GBP-FP students still studying in the various faculties
S Number of students interviewed

As illustrated in table 6.4 there were by the end of 1998 relatively few (60) GBP-FP students left in the four faculty groupings - all year groups included. If these figures are considered in relation to the 20 (plus 7 FP only in M&D group) students interviewed during 1998, the initial impression that the distribution of the interviewees were uneven and the results possibly biased, is put into perspective. Only the M&D

group is over-represented, but the reason for this is the possible effect of the transition to a different campus, as explained earlier. The figures in table 6.4 also explain why it was so difficult to get hold of E&B students. A large number of students in the selected group have already left the campus by the time the attempts to contact them started.

6.6.4.2 Focus groups

This method of data collection was planned, not only because of the general benefit of a group discussion with a focused purpose, namely a wider variety of viewpoints, but also because it would have allowed information from more students within the same time schedule. The features of a focus group include the requirement that a series of group discussions will be held to detect patterns and trends across groups (Krueger, 1994:17). In this data collection process several group interviews were conducted, but mostly with only three or four people per group. In the data analysis these groups will not be considered focus groups.

6.6.5. Trustworthiness of the study

Several strategies were employed at various phases of the qualitative research process, to enhance the trustworthiness of the study. As suggested by Miles and Huberman (1994:22, 230-243) strategies of data verification were used before, during and after data collection.

6.6.5.1 Quality of the data

Mechanisms to enhance the validity of the study by ensuring the quality of the data were built in at the planning phase of the research. These were, for example, the use of the stratified sampling method (see 6.6.2.1) for the selection of cases. The selection of cases according to faculty groupings as well as from different year groupings, ensured that the whole spectrum of the data source could be explored, and that the selected cases would be representative of the population of GBP students. By using the same interview guides and probes in different settings, the quality of the data was enhanced.

6.6.5.2 Triangulation

Triangulation refers to the use of different methods to check the validity of findings (Layder, 1993:120; Singleton, Straits & Straits, 1993:392). In this study triangulation was used across data sources and methods during the various stages of data collection, by collecting sets of data from students in different faculties, and by conducting both individual and group interviews. During the final data analysis phase triangulation, in the form of a peer check, was used to support the findings (see 7.3).

6 6.6 Data analysis method

Qualitative research is a data-driven method in which data collection, data reduction, data display, and the interpretation or the drawing and verifying of conclusions happen interactively (Miles & Huberman, 1994:23). Because of the nature of the approach, it is difficult to break the qualitative research process down into various stages. For this reason only a brief description of the various *tasks* which form part of the data analysis will be discussed here. A more detailed discussion of the analysis process will accompany the presentation of results (see chapter 7).

Transcriptions were made of all audio-tape recordings. These transcriptions were used for data analysis, supplemented by the memos made directly after each data collection activity. The data analysis process consisted of three kinds of task, which were inter-linked and repetitive, with each repetition at a different level. The three tasks involved were firstly, organising information and identifying patterns; secondly, developing ideas and thirdly drawing and verifying conclusions (Singleton, Straits & Straits, 1993:346).

6.6.6.1 Organising information and identifying patterns

This task implied a simultaneous process of data reduction and a preliminary interpretation of the data. The process started with open coding (level 1 coding), that is, producing a working set of codes which described and clarified the data, and which enabled the identification of broad categories and trends. At the next stage, categories were refined (level 2 coding), regularities in the data were marked, and core categories

and recurrent themes were identified.

6.6.6.2 Developing ideas.

The development of ideas had already started during data collection and the writing of memos. During the process of data analysis from transcripts, new ideas emerged continuously, and the initial narrative reports were changed into various kinds of data display, like matrices, graphs or network displays (Miles & Huberman, 1994:21). These displays illustrated the development of ideas and made the data more accessible. As the ideas developed further, the displays changed and enabled the continuous drawing of conclusions.

6.6.6.3 Drawing and verifying conclusions

Although the preliminary conclusions became apparent quite early in the data collection process, even before the formal data analysis process started, the awareness of trends and patterns was constantly verified by further data collection. The conclusions that emerged, firstly after open coding (level 1), were verified by the first peer check; and after level 2 coding, the patterns and themes that emerged were again verified by a second peer check. Furthermore, the data was constantly scrutinised for contradictory evidence, to confirm or discard conclusions, thus constantly seeking to verify findings, until the final conclusions were drawn.

As already stated at the beginning of this section, this is only a broad framework of aspects of the data analysis. The step-by-step process of analysis will be explained in detail and will become clearer during the simultaneous discussion of the analysis and results of the qualitative data in chapter 7.

The two-pronged approach to the empirical research, namely a quantitative and a qualitative approach, and the different nature of the results yielded by each, requires that the research results be reported separately. In the following chapter, the qualitative research analysis and results will be presented and discussed, and following that, in chapter 8, the results of the quantitative research will be presented and discussed.

CHAPTER 7
ANALYSIS OF THE QUALITATIVE DATA

To establish some of the reasons behind the students' performance by going beyond the results indicated by quantitative measures, the study included a qualitative research component. The process and results of the qualitative data analysis will be presented together in the following discussion. The description of the process will be based on the tasks involved in the data analysis, rather than on a step-by-step exposition of the analysis process. The three tasks that were performed repeatedly, but in an upward spiral regarding the level of the tasks were, firstly, the organisation of information and the identification of emerging themes, trends, and patterns; secondly, the development of ideas and, thirdly, the drawing, and verification of conclusions.

7.1 Pre-Level One analysis

During the interviews, and while the transcripts were being checked against the original tape recordings, a very superficial interpretation of the data already indicated some overall trends which were present in the four groups. The trends that were identified, but were to be verified by a thorough analysis of the data were, firstly, that there was a definite distinction between the experiences of the *African* and the other students who took part in the bridging and foundation programmes; secondly, that the four-week bridging programme apparently had more social than academic value in the participants' later study years; thirdly, that language was a definite issue, especially for *African* students; and fourthly, that the culture of the University does not fully accommodate diversity in the student population. These four apparently overall trends emerged to a greater or lesser extent in all four faculty groupings. The detailed analysis, which is described further on, would verify or contradict these provisional conclusions.

7.2 Level One analysis

The analysis at this level was done per faculty. The transcriptions of interviews with students from one faculty were read through to identify the broad categories of topics

that were mentioned in figure 6.4, the basis of the interview guide. These were academic activities (AA), the four-week Gencor Bridging Programme (GBP), the foundation programme (FP), and factors influencing the students' progress (INF). The four categories were colour coded in each transcription, to facilitate identification during the further stages of the analysis. All responses which did not fit into any of these broad categories were marked. In some cases responses could be categorised into more than one of these categories. All the possible categories were indicated by their colour codes to prevent premature exclusion of data.

After this, open coding (level 1 coding) was done and themes which were appearing from the responses regarding a specific category were noted in each transcript. These themes were then compared within faculties, and the broad trends within each faculty grouping were listed. No relations between categories either within or between faculties had been identified at this stage. The lists of themes identified are presented in Table 7.1. Because of the differences in the data collected from the Forestry students, (mainly *African* respondents) these are reported separately, as will be done where necessary during the further analysis. In such cases Group 1 will be divided into two groups, namely 1a (Forestry) and 1b (rest of group 1). In all other cases, group 1 will be treated as one group with a) and b) combined.

In table 7.1, and for all further analysis, the faculty grouping will be as follows:

Group 1a (For): Faculty of Forestry

Group 1b (Nat): Faculties of Natural Sciences, Agricultural Sciences
(separated where necessary, otherwise grouped together as Group 1 (Nat))

Group 2 (E&M): Faculty of Economic and Management Sciences

Group 3 (M&D): Faculties of Medicine and Dentistry

Group 4 (Eng): Faculty of Engineering

The themes which are listed in table 7.1 are in no way a comprehensive record of all that was said by each respondent. They merely represent the most frequent remarks that were made by the respondents, and which seemed to be the general trends while coding the data and comparing the themes within faculties.

Table 7.1 Broad themes emerging from data, reported per faculty grouping

Group	Categories of topics
Group 1a (Forestry)	Language issues Educational background University facilities, status and culture Discrimination/Racism Support group - social and academic in own cultural group GBP and foundation programme, both social and academic value, but need follow-up Worried about family at home Determination to finish Frustration caused by wrong information from university Isolation - no feeling of belonging
Group 1b (Natural and Agricultural Sciences)	Realise own social and academic responsibility Commuting expensive and time consuming Importance of lecturers' attitude and expectations Experience of GBP and foundation programme relatively positive, but there is almost no transfer of skills
Group 2 (Economic and Management Sciences	Transition - school to university implies several changes Living off campus a problem Image and atmosphere of US very positive Value of friendships in own culture group Marketability due to career choice Lecturers as rolemodels GBP has social and some academic value Foundation programme - boredom causes non-attendance
Group 3 (Medicine and Dentistry)	GBP and foundation programme: social value, not academic Ineffective structure/time-scheduling of foundation programme Value friendships in faculty - especially when living off-campus Contrast between Stellenbosch and Tygerberg - both climate and facilities Status of US Positive and negative comparisons with other universities
Group 4 (Engineering)	GBP and foundation programme socially beneficial, but academically not very beneficial Conflict between own academic responsibility and dependence Exclusion causes humiliation Rather ask friends than lecturers Strategic studying Unsatisfactory explanations during lectures

There was no check within or across faculty groupings for either confirmation or contradiction of any of these listed themes. The themes are also not explained here. Their exact meaning will become clear by the examples which will be quoted from the data during the next stage of the analysis.

7.3 Level two analysis

Still working with individual transcripts, level 2 coding was done to further reduce and contextualise the data, and to indicate what each of the previous codes represented. The aim was to go beyond the apparent responses offered by the students, and to identify higher level (level 2) categories. After their identification, the classification of these level 2 categories was done across faculty groupings around the initial four broad categories (AA, GBP, FP and INF). This will be illustrated in figures 7.1 - 7.4. No comparison between faculties, or verification of findings, either within or across faculties, had been done yet. It was, however, necessary to verify the identified emerging themes and their contextualisation with a second opinion.

For this purpose a peer check was done. A copy of a transcription from each faculty grouping was handed to a colleague who taught at a historically *black* university (HBU), has experience of qualitative research and has obtained a post-graduate qualification in Higher Education. She was requested to identify broad themes within faculties, to classify examples of responses under these themes and to place them into a wider context. No background regarding the interview guide or any intuitive conclusions were given to the colleague. The findings were compared and discussed. There was very little difference between the identified themes, and their contextualisation. Although the classification of responses was also very similar, some of the reasons behind a specific classification differed. This widened the perspective, and created new possibilities regarding the further analysis of the data.

The classification of themes during the level two analysis will now be discussed and illustrated with examples from the data. The order of the discussion follows that of the initial broad categories, namely academic activities, the Gencor Bridging Programme, the foundation programme, and factors influencing progress.

7.3.1 Themes related to academic activities

The higher level categories for these themes, as illustrated in figure 7.1 are classroom environment, out-of-class learning, assessment, and affective factors.

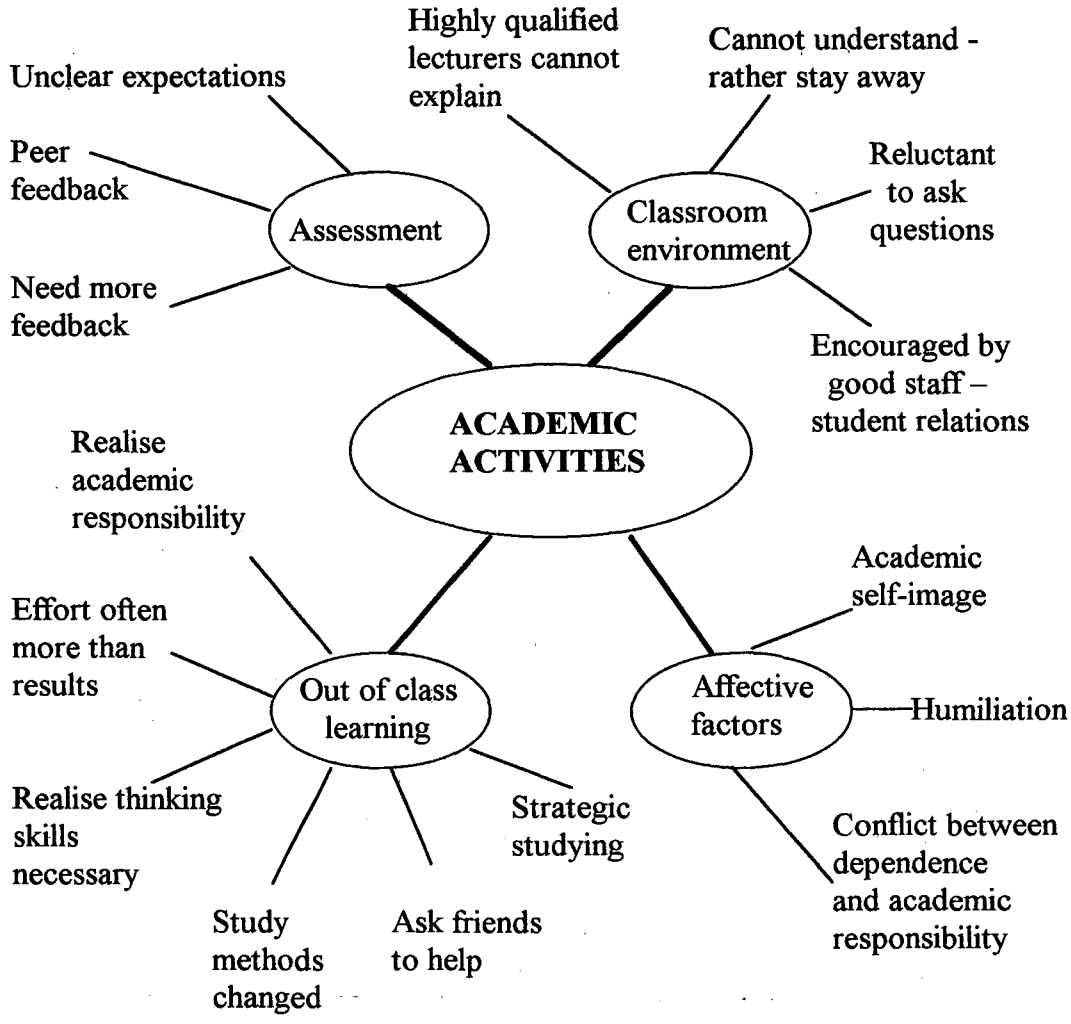


Figure 7.1: Classification of themes related to academic activities

7.3.1.1 Classroom environment

The students' experiences in the classroom play an important role in their total experience of the university. At the University of Stellenbosch, the class contact hours for first year students in the four faculty groupings investigated in this study, are on average about twenty hours per week. This is almost half of the notional study year of a total of 1200 teaching and learning hours (*notional study hours*) based on a 40 hour week in a 30 week academic year, as specified by SAQA (University of Natal,

1998:6). It amounts to about 40 to 43 teaching and learning hours per week during the academic year. For example, during the second semester of the first year of enrolment, the number of contact hours, which includes lectures, practicals, tutorials and seminars for a student following the extended five year programme in chemical engineering, in other words taking part in the foundation programme, totals twenty-seven and a half hours (University of Stellenbosch 1998:20). The Faculty of Engineering expects 60 hours per week of academic activity (contact and study hours at home), from students enrolled for their courses, during the academic year (University of Stellenbosch 1998:10). With the above information in mind, one becomes aware of the importance of the classroom environment in the students' total experience of the University.

The themes that were identified indicated that the respondents had respect for the knowledge and qualifications of their lecturers, but that the presentation skills, and especially the ability to explain the work to the students, was unsatisfactory. The following examples from the data illustrate this. (The Afrikaans responses had to be translated, and although all translations were done directly, some of the underlying meaning implied by certain expressions, was lost in the translation. In order to capture the implied perception, which was indicated by the students' choice of words, the original Afrikaans is included occasionally, but in most cases either the introduction to, or the explanation of what had been said would include an attempt to reproduce the undertones of the responses.) The following examples reflect the reasons given by different students for the unsatisfactory explanations by lecturers.

> "Nobody ever knew what was going on in his class ... I think he is too clever to be a lecturer ... "
>
> "I think some of them are a bit too qualified ... their way of thinking is way up there ... they can't come to your level ... they explain in a way that you know they assume you know the things ... "
>
> "He's talking there, but you don't understand what he is saying, and if you ask a question, he explains and explains, but you still don't understand."
>
> "I've noticed the misters and misseses, they usually explain quite well, but the doctors and professors, they don't know how to explain - they've got a problem ... " (The original text expressed almost a naive sympathy with the lecturers who have lost the ability to do their 'real' job well, namely to

teach).

The fact that the students complained that some lecturers are not capable of explaining the work on their level is not unique to this group. What was interesting was that they attributed the poorer explanations to the doctors' and professors' higher qualifications. There was, however, also another more significant trend, namely that students actually decided not to attend classes if they continually did not understand what was going on in a specific class. Whether their lack of understanding was due to bad lecturing, too difficult work, or a language problem, made no difference. They would rather not attend classes than repeatedly ask the lecturer, either during or after class, to explain something to them. The following remarks, by different students, show how they handled their frustration of not understanding.

"We do not understand what he is saying ... and many people just started to stay away from his class ... and then it is better to work on your own."

" ... that is really bad ... we struggle ... I did my work - I just cannot spend my time on that - you understand?"

" ... if you ask me, will I be happy to go into a course offered in Afrikaans, and the lecturer will help, I'll say, 'no, I won't be comfortable' ..."

"... you just don't understand ... so I decided I should drop this course, because it's a lot of work, and its given in Afrikaans ... "

"... there was a time when I decided to just quit Afrikaans classes, I just don't go there ... I told myself, what is the use of going there ... "

There was also a reluctance among students to ask questions, because of the fear that they might appear to be stupid. This feeling was directly expressed during most of the interviews.

" ... you don't want to tell the man, I **still** don't understand it ... you don't want to ask the lecturer to explain again, because he might think 'I have now explained this twice already, is she not just a plain stupid female?' ... so I won't ask."

" ... she puts you down in a nice way ... in the end you feel you are so stupid, you must rather not ask anything again ... "

" ... you don't want to ask, because you are scared they might think

shame, he is a bit stupid' *(hy is maar lekker dom)* ... "

" ... when you ask something, to them it may seem stupid ... "

" I am too scared to ask a stupid question ... you're like too scared to put up your hand and ask a question ... how can that be like you're too scared!"

" ... like with 200 people around you, and you know if you put up your hand for a stupid question ..."

Another reason for the students' reluctance to ask questions, was the attitude of some lecturers, and the humiliation which they experienced due to the lecturer's reaction or condescending remarks.

" ... why my boy, can't you see? ... it is there on the board ... "

" ... all this guy asked him was, must the arrow be in that direction? ... and he explained to the guy for a whole half an hour, and you know like hammering on this guy on why he doesn't have to know in which direction the arrow must be. But I mean he did it in such a way, that ... the guy wouldn't ask a question again."

" ... the reason why you don't go there ... I suppose it is wrong of me to be like that ... it is just the lecturer's attitude towards the students ... you're sort of scared of that type of thing ... "

" ... even when you go to the lecturer, you ask questions ... that atmosphere is not a welcome atmosphere ... "

Some of the reasons why students do not feel free to ask questions relate to language issues. This will be discussed in more detail with the factors influencing progress (see 7.3.4.4). All the students emphasised during the interviews that only some of the lecturers were causing their negative experiences, and that there were many lecturers whom they respect, and whose efforts and attitude they appreciate. Some of those experiences are reported now.

" ... and she had confidence in me ... and again I got a distinction ... and it was just that confidence ... I felt free to go to her when I had a problem, and she helped me."

"I think that is how I survive ... here the classes are small, the lecturers

know each individual student's problems ... "

" ... so I had to talk to the lecturer, and it really made a difference ... "

" ... here they are much more friendly ... they are much more approachable, and willing to help you ...

" ... in our department there are lecturers ... I can just go and talk to them"

Students' classroom experiences are closely linked to their experience of the fairness and relevance of their assessment. The purpose of their being at the University is to pass their course and obtain a qualification. All their other academic activities culminate in assessment.

7.3.1.2 Assessment

Here the focus of the students' responses was on the need to know what is expected from them, as well as for proper feedback. Only a few examples are quoted in order to illustrate the difference between classroom practices and assessment and to emphasise the importance of feedback in the total learning process.

"His classes are very theoretical, but when you get to the test, there is only 30% theory, the rest are problems. You must be able to solve problems from the theory, without having done much of it in class."

" ... there are other things that I just don't understand ... what do someone expect of me from here? But then I just sit with my paper, and think, what can I do ... there's something more, but I don't know that something ... "

" ... do an assignment and submit it, when it comes after marking it, when you see the comments, its very few comments, but you have a low mark ... it does not say what is really expected."

One of the benefits of groupwork, as the students perceived it, was that it gave them at least some feedback either directly from peers, or by comparing their performance with that of peers.

" ... you can start to have the feeling of how it's going compared with other students"

This remark expresses the value of sharing experiences with peers and realising that

one is not the only one struggling. This is part of a feeling of integration, which is one of the main determinants of student persistence (see 2.5.3). The role of the peer group will be discussed further as part of the academic value of the Gencor Bridging Programme (see 7.3.2.2)

Much of what has been quoted up to now, could just as well have been experienced by white students. Therefore, it is necessary to put the previous discussion into perspective. What needs to be considered is the responsibility of individual lecturers regarding their teaching and assessment practices, as well as possible ways in which the University can contribute to improve the situation.

The next aspect of academic activities to be discussed, is out-of-class learning. There were some positive findings in this regard, such as students' realising their own academic responsibility, as well as the need to change their school-oriented ways of thinking and studying in order to meet the demands of the higher education environment.

7.3.1.3 Out-of-class-learning

The first aspect in this sub-category to be illustrated is the indication that students realised that they have to take responsibility for their own learning.

> "If you have worked out the problems and then went to class, it helped. If you just sat there and did nothing, then you were wasting your own time."
> "I think that is the difference between school and the university, because they want to teach us to work on our own ... they teach us to be independent here, but **you** have to decide whether you want to ..."

The students also realised that they needed to approach the work differently, not simply learn by rote, but try to understand and reason on a higher level. Some of them indicated that they had had to change their study methods, although they still tried to memorise the parts of the work which they did not understand, or just left it out. In this sense they were studying strategically, although it was not always the best strategy to follow.

> "I don't know, perhaps my study methods were wrong. I have studied

almost everything, and it did not help me at all."

" ... trying to understand the work is better than anything else you can do."

"The first year students still study as they did at school ... only in the last semester you start realising how you actually should study."

" ... you must approach the problems from the principles, and not just learn rhymes of this is that kind of problem, and you do it so ..."

"It irritated me at school that they gave you the facts, and you had to study them ... At university they say, here are the facts, take your textbook and other sources, bring your own thoughts, make summaries and use that for the exam ... I like that a lot ... "

"At school ... in maths class ... the teacher taught you a recipe ... here they ask you what do you think ... they look at it critically."

"I think I found other ways to approach my work ... "

Indications of strategic studying were the following:

" ... you understand some of the work, and you study the other subjects that you must know, and that is how you pass."

"But I just studied the first few pages of what I thought was relevant ... "

" ... we had thermo, and thermo-dynamics and movement. So what I did was just to concentrate on movement, and now we have thermo-dynamics as a subject !"

Most of the students felt that the effort which they put into their studying was not reflected in their results, especially during their first year. However, some students realised that their attitude towards a subject and their examination technique also affected their results.

" ... like in the first year, I have put in so much work, and what I got out was not good."

"I experienced, I really studied ... and that day came, and I just ... it is not always like you expect it ... "

"Sometimes if you perhaps don't like a subject ... whether you have studied a lot or a little ... if your attitude is not so positive, it causes that

you don't do so well ... "

" ... it depends ... but there were times when my marks were different from what I expected ... "

" ... I was disappointed ... I really put in a lot ... but then the results were not so good ... I've asked myself whether it is some technique, or do I work the things out wrong, or don't I understand the work? In most cases I understand, but you don't know what they are going to ask ... "

" ... in some cases I get what I expect ... but most of the time I think I work too much ... I work **so** much, and I get so little ... "

The last trend in the category out-of-class learning, was that most students would rather ask a friend from their own cultural group than a lecturer if they do not understand something.

" ... sometimes I study, and I don't understand ... I have friends to help."

"Well, the thing is, the work is not easy, so you can't really say I understand everything. So, when I am on my own, there is constantly something that crops up ... medicine isn't a subject that you can study on you own ... you have to groupwise study this ... "

" ... nobody has always all the answers ... if you exchange ideas, then in the end you can find an answer."

" ... It is too much trouble to contact a lecturer if you have friends to discuss the problem with."

" ... suppose I don't understand something, then I'll rather go to another person, not a lecturer, but a friend ... "

As has already been indicated several times earlier in the study (see 3.3; 4.5.1), the cognitive and affective aspects of a student's academic activities are very much interwoven. Therefore the analysis of academic activities also includes themes which relate to affective factors.

7.3.1.4 Affective factors

The feelings and emotions which were part of the students' experiences during their academic activities were, firstly, conflict between the realisation that they must take

responsibility for their own learning, and wanting to cling to the comfort of being dependent on their lecturers and, secondly, feelings of humiliation. There were also definite indications of the nature of their underlying academic self-image, which was reflected in some of their remarks. The following quotations illustrate the conflict students experienced.

> " ... it is a good thing that we learn to approach problems using the principles ... we have a feeling of dissatisfaction with the lecturer, but ... I think he taught us something good ... "
>
> " ... she is going to say you must do it on your own ... " (expressed with indignation and then a thoughtful remark) "I suppose I'll have to work harder ... "

Indications of feelings of humiliation were mostly implicit in the choice of words, while describing an incident, or in the tone of voice, rather than expressed explicitly by the students.

> " ... when you sit in class ... and you sit in a certain bench ... then only *Coloureds* will sit there ... nobody will sit down next to you - nobody, nobody, nobody of the white students ... they will sit about a bench away from you ... I mean that is **bad** ... (dit is **erg** ...) ... if someone sits down, he looks at us, and then he moves to the back ... that is **bad** ... "
>
> " ... when you stand in another room, and you hear them talk of that *black* what-what ... now you have your pride, you have nothing but your name to defend ... "
>
> " ... one day I went to church, and there were no chairs, then I sat next to the other white person, and she **shifted away** from me!"

Some of the incidents mentioned here that caused humiliation, especially in the classroom, were probably not done intentionally. However, it did not lessen the feelings of humiliation caused by the behaviour of the white students. This theme emerged again with the factors influencing the students' progress (see 7.3.4.4)

How their academic self-image, whether positive or negative, influenced their academic activities, was not mentioned explicitly by the students. It was

communicated by the implicit meaning of what they said, while they were talking about their experiences.

" ... because when you come from a disadvantaged school, you are nervous about the work that you will have to do ... "

" ... I could see that some people were just **ahead** of us ... "

" ... when I compare myself, I am the same power with them ... "

" ... now my fourth year, I saw that now I can make it ... "

" ... when I first came here, I thought I was not university material ... because when you come from what they call a disadvantaged community to a university like this one, you think that 'no, I'm not going to make it' ... but today I'm encouraging the others, they are going to make it ... "

Participation in the bridging programme also influenced the students' academic activities to a greater or lesser extent. The range and intensity of this effect will become clear during the following discussion.

7.3.2 Themes related to the Gencor Bridging Programme

The higher level categories for the themes related to the Gencor Bridging Programme, which are illustrated in figure 7.2, are contents of the programme, its academic as well as its social value, and affective factors related to the students' participation in the programme.

7.3.2.1 Contents of the programme

The remarks regarding the workload during the bridging programme indicated that the students found the hours very long, and although they accepted the explanation that the purpose was to introduce them to the rigour of higher education, they still thought the programme was too full.

" ... I must say, there were many hours ... it was quite tough ... "

" ... the times are unrealistic, nobody can concentrate for two hours ... "

Some students experienced the contents of the programme as a repetition of matric work. Depending on the educational background of the particular student, this was

interpreted as either a positive or negative experience, as can be seen from the following remarks.

" ... for me it was a lot of work at once, and I couldn't grab anything, ja, maybe I got something, but not much, because there was too much for me to learn at once ... I just did not know anything ... "

"I did not learn much, but some others did ... it depends how well you prepared for your matric examination, and how well you understood the work ... it was in any case just a repetition of matric work."

" ... but academically I think that it was a waste of time, because basically we were doing matric work ..."

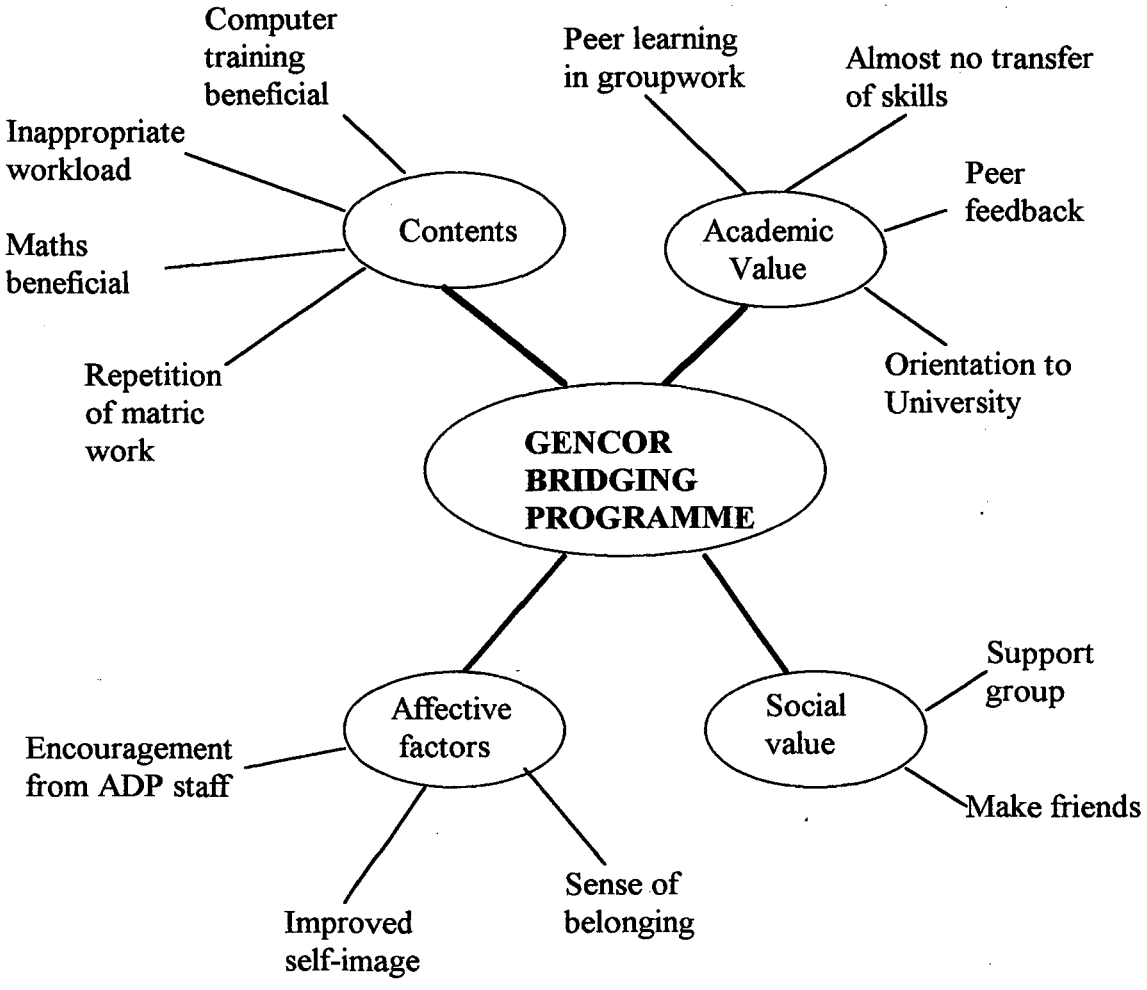


Figure 7.2: Classification of themes related to the Gencor BridgingProgramme

For those students who felt that the content of the programme was good, it was mostly the mathematics and computer training that were considered very beneficial.

"I think that it really helped, especially some of the things ... like maths ... some of the things that we learned ... I've benefited from it ... "

" ... the computer, it was of use ... just too short ... "

"I knew nothing about computers ... that was very useful ... when we did it in our first year, I was ahead of some of the others ... "

The contents of the programme, how much they learned and to what extent they could apply the new knowledge to their mainstream activities, determined the academic value which the students attached to the programme.

7.3.2.2 Academic value of the programme

" ... that one that I was on the bridging programme, I learned a lot ... "

" ... it sure have been of use, but the problem with me, is that I came knowing nothing. So it was too much for me at once ... "

" ... academically I do not think it helped me much ... I did not really benefit academically."

" ... I don't really see the purpose of the bridging programme ... "

" ... it is a sort of an introduction to campus life ... it helps you find your feet ... "

Some students did not quite realise the purpose and/or application possibilities of some of the general study, and problem solving skills, as well as of the various reading techniques that they were taught during the bridging programme. Consequently there was, in many cases, no perceived transfer of these skills and techniques to their mainstream subjects.

" ... I am not doing BA, so I won't use those techniques, like scan and things ... "

" ... the study skills ... I forget what's that stuff ... I've got my own method of studying ... "

" ... the study skills ... you are not going to have time to apply that when you are on campus ... you have to think of so many other things ... "

This once again emphasises the importance of contextualised teaching of study and

thinking skills. Although they did not realise the value of some of the techniques practised during the GBP, many students benefited from the exposure to group work and the peer learning which they experienced during group sessions.

" ... it was actually helpful, because there you had others to help you ... for me it was still difficult, but I could see that it was helping, and I think that it is the best way of learning ... you have these people to discuss the things ... whenever you cannot remember, the others can help you ... "

" ... nobody always has the answer to a question. You might have an idea, your friend brings another idea, you exchange ideas, and that is how you reach an answer ... "

" ... everything together, you can get an overall impression of what it is all about ... "

7.3.2.3 Social value of the programme

" ... when you arrive here, you don't know anybody. That is quite difficult, but I met a lot of friends during that first week ... "

"One of my friends came to see me today, from the bridging programme. He's not studying here anymore, but he came through to see how I'm doing ... "

" ... I feel the friends I've met, most of my friends from the *Coloured* community, most of them I've met on the bridging programme and we are still very good friends ... " (remark from an *African* student).

" ... we became friends, because we were almost together all the time ... then we continued in one group ... "

" ... to me it was more of getting a bond with other students ... "

"I have quite a large group of friends due to the bridging programme ... "

"It was very nice. I made a lot of friends ... I am still friends with those people I met on the bridging programme ... "

7.3.2.4 Affective factors

Some of the students expressed their satisfaction with their experiences during the programme.

" ... the standard was very high ... like everything was very good ... "

" when I was in the ADP, this is where my life changed ... "

It was mainly the same students who were satisfied with the programme, whose self-image improved.

" ... because we think the only people who are disadvantaged are *black*, and there are some white students who are also disadvantaged ... "

"The bridging programme actually helped me a lot. When I first got there, I thought, what am I doing here, are they once again underestimating my intelligence? why must I be on this programme? ... but then I realised, no, it was definitely worthwhile ... "

Their appreciation for the encouragement by ADP staff during and after the bridging programme was obvious from some of the students' remarks.

"she said I can come to her anytime when I have problems, and she said to me I can do well ... "

" ... when I'm feeling down, I just go and talk to one of them, and then I can go on again ... "

" ... when I leave Stellenbosch, I shall remember what the ADP-people did for me ... "

The students' total experience of the GBP was very varied. Most of them referred to both the GBP and the foundation programme as the bridging programme, however, from the context, one could distinguish which one they were actually referring to. In those cases where it was not so clear, the students were asked during the interview, to which programme their remark related. Some of the themes which emerged from the data regarding the GBP were also identified during the analysis of the responses to the foundation programme.

7.3.3 Themes related to the foundation programme

The higher level categories for these themes, as illustrated in figure 7.3, are the contents of the programme, the instructional methods, the structure of the programme, and the emotions experienced by the students. An additional general

theme, which was interwoven with various other themes, and was identified in all the transcripts, was that following the foundation programme was very time consuming.

7.3.3.1 Contents of the programme

Similar to their remarks regarding the GBP, some students regarded the contents of the foundation programme as a duplication of their matric work. These were mostly medicine and engineering students, and they all considered it a negative aspect of the programme. The Engineering students also complained that they had to repeat a subject in later years which they had done already during their foundation year. The following responses indicate the nature of their experiences.

> " ... like we did communication, and now we have to do it again in our fourth year ... I think that is a bit unnecessary ... "
>
> " ... I have done communication now, and I have done it in my first year, and I asked them why must I do it again?"
>
> " ... it was actually easy, because it was very much like school ... "
>
> " ... to do your matric subjects again is ridiculous. I mean we have all passed matric."
>
> " ... unless you did not do chemistry and physics in high school, and especially matric, then it would benefit you. But for us that did it ... it did not help at all."
>
> " ... the preparation course had no value for us ... the preparation for physics and that, is all work that we had done in matric ... "
>
> " ... chemistry was almost on standard 8 level ... they can rather cut that out and let us do something which is more relevant ... "
>
> "You find that people fail subjects which hasn't really got an impact on the medical field ... if you fail something because of something which is not relevant at the time, I don't think that is beneficial to anyone."

As can be seen from these last remarks, some of the courses were also considered to be irrelevant. In some cases, for example with Bio-statistics, they did not yet realise the importance of the course. However, their complaints seemed to be justified in some other cases, because of the contents of the specific courses. Even if a course was necessary for their understanding of the work at a later stage, the level at which it

was presented made it irrelevant, or at least inappropriate, as preparation for further study. What the students felt would have been useful, was some preparation during the first year of the foundation programme for the later demands of courses.

" ... they could have given us an introduction to first year physics perhaps ... something more directed to the first year subjects."

" ... the pace in physics is so fast ... if they can give us some of the basic concepts, then it will be much easier for us"

" ... they must rather concentrate on the work that we had to do in the following year ... perhaps an introduction to the second year ... "

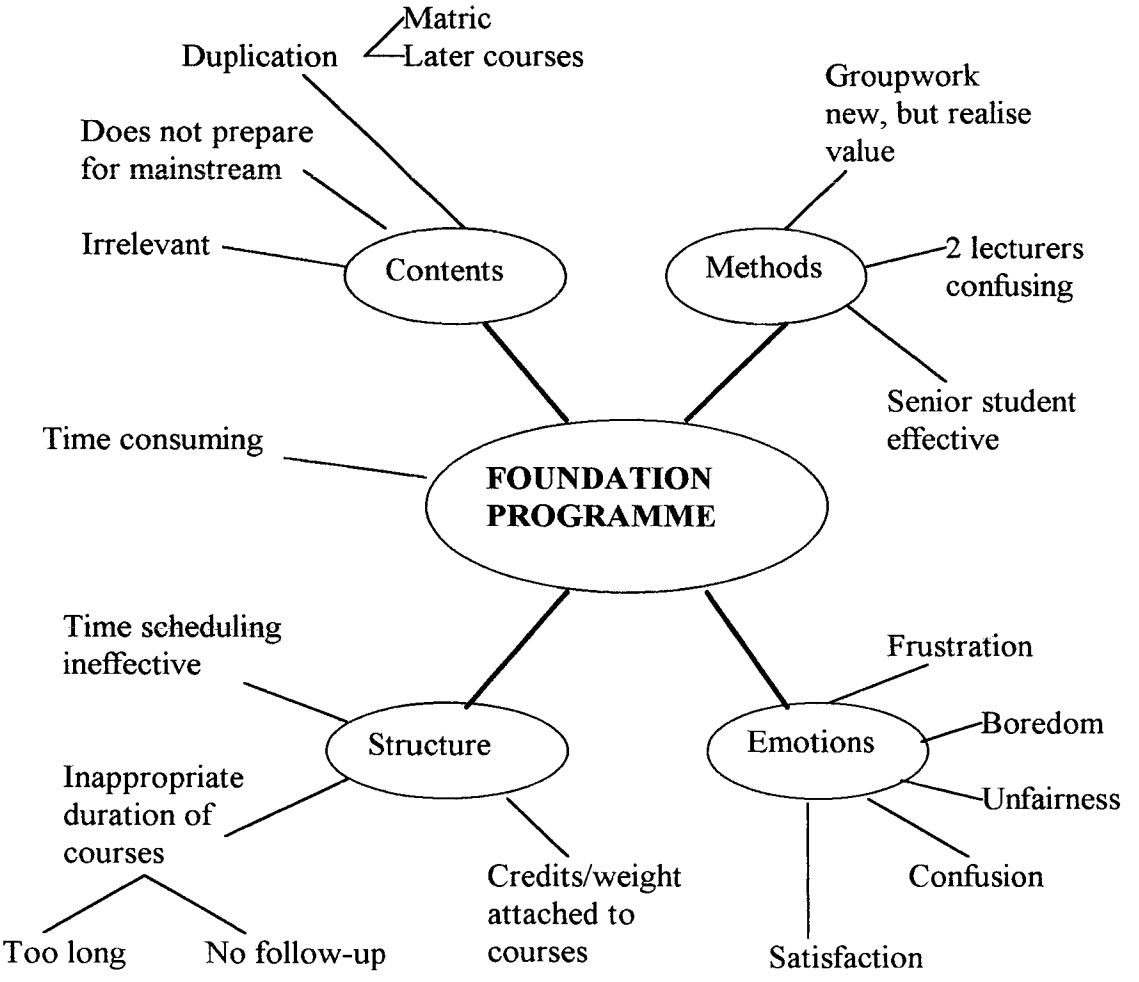


Figure 7.3: Classification of themes related to the foundation programme

What both the medical and engineering students actually suggested, was that the service courses should be more directed to their disciplines. In other words, they were

suggesting something like bio-physics for medicine and an introduction to engineering physics. Some students felt being on the foundation course was actually detrimental to their progress.

> " ... you could just as well have gone directly into the four year [mainstream] course ... perhaps you would fail a few subjects, but at least you would know what was going on in those subjects. If you then repeat those subjects, you have a better chance of passing them ... "
>
> " ... I think you learn to waste time when you are doing the longer course, because many of the subjects are unnecessary, and the work is on matric level ...

Although the students complained about the contents of the programme, most of them realised the value of some of the instructional methods, especially the group work.

7.3.3.2 Instructional methods used during the programme

Various forms of group work were used during the foundation programme. The students who took part in the GBP, had been introduced to this method during the four weeks. For many of the other students who were following an extended course, this was a new method of instruction. Although not all of them always enjoyed taking part in group work, most of them realised the value of working in a group.

> " ... at school they never taught us maths in such a way ... we never did group work, so I had to get used to it ... "
>
> " ... I think the group work is important, because when you finish studying, you will have to work in a team ... "

When group work, which was used during additional classes as part of the foundation programme, was conducted by another lecturer instead of a senior student, the first year students found it confusing. However, when a senior student was used for extra group work, it seemed to be more effective.

> " ... it was quite tough ... because we had two lecturers for the same subject ... and the one lecturer says this and the other says that, you can't have two lecturers teaching the same thing ... if one lecturer uses this method and the other lecturer uses that method, how must you know what

you must do?"

" ... we had a bit of group work in Biostats ... there were people that came in ... it was students that helped us ... if it wasn't for that, I don't think any of us would have passed."

" ... I made it because of that ... she explained on our level ... not way up there while nobody knew what was going on ... "

" ... lecturers should not just repeat what was said in the main course, they should identify the students' problems, and discuss that ... "

If the session in-between lectures becomes just another lecture, instead of a discussion in which students' understanding is broadened and their problems are solved by discussing them with *other students*, the whole object of the exercise seems to be lost. The session then confuses the first year students. To be effective, the senior student should be selected carefully.

" ... but then these tutors were also just other students who were good at the subjects ... they don't go hand in hand with the lecturers ... so it was also difficult ... "

The contents and methods of the foundation programme had to fit into some structure. Comments by students on aspects of the structure will now be discussed.

7.3.3.3 Structure of the programme

There were several problems and suggestions by the students regarding the structure of the programme, and the sequencing of courses. The respondents had different opinions on the duration of some of the courses. The medical students compared the US courses with the structure of similar courses at the University of Cape Town (UCT), and made some suggestions, based on their experience of the US course and their perception of the UCT course. Some of their major complaints had to do with the physics course.

" ... we did physics in our first year as the help course and then in the second year the actual first physics ... we did not ever hear of it again ... and the things they cover are not relevant and appropriate sometimes ... I am sure if you compare to other universities, they do only six months of

physics ... "

" ... and if you fail physics ... you have to do one subject the whole year ... you cannot come here [Tygerberg] ... that is not fair ... "

" ... I think the subjects that we had problems with in our first year - many other universities do not pay so much attention to it ... so basically we fail because of the subjects at Stellenbosch ... you can say we have the same intelligence as those people ... but we are suffering because of something that is not necessary ... "

It was not only the medical students who had problems with physics, but the problems that the engineering, natural science, and forestry students experienced were related to the contents and presentation of the course (7.3.3.1).

Another aspect of the duration of the foundation course was that there were no follow-up activities afterwards, when the students were in the mainstream. Some students felt that they needed further emotional and academic support during their later study years. Their suggestion in this regard was that support should take the form of less frequent organised group sessions.

"So the actual effect of that thing had lasted only a year. Unfortunately there was no follow-through that could take me to my second and third year ... "

"Once you get through your first year, they take it, now you can get through university on your own, and that is when the problems actually start."

" ... maybe like meeting once every two weeks ... like shuffling the students' problems ... because a lot of students leave this place, sometimes they change streams, some sit with confusion ... "

Most of the students complained that they had to devote so much time to subjects which were not credit-bearing.

" ... I think we spend time on a subject, and we should get credits for that subject when we pass it, it should not be like it is now ... "

"It was very time consuming during the first year, because you did

subjects which were not credit-bearing ... "

They also felt that the workload distribution over the years did not help them.

" ... when we get to the real second year, we feel much more pressurised than what the other students actually feel ...

" ... in the second semester of your first year, you only have one subject, and when you come to the second part of your first year, then you sit with more subjects ... I can't see why they can't divide it more equally"

" ... we only had four [engineering] subjects for the whole year, compared to the others who had about twelve ... I found it very frustrating to do all the irrelevant subjects ... I think it is ridiculous to be on that course, especially in the first year."

What was positive about the respondents' reaction was that they did not only complain, but had some quite realistic ideas about how the programme could be improved. Apart from the suggestion which has already been mentioned, namely that the service courses should be more tailor-made, there were also other suggestions.

" ... at the moment it is the lecturers or the dean or someone who sets up the subjects ... they assume things, then take the subjects and make it easy for the students - something like that. They don't actually sit down with the students and ask the students ... what is your experience ... they just assume what the problems are that we are experiencing - there is no interaction ... "

" ... if we can do all our biology subjects in the second year, then all that knowledge is ... still fresh ... "

" ... and if they move physics to the first year, and you fail, then you can repeat it in your second year, and it does not hold you back ... "

With the restructuring of the pre-clinical medical course, these suggestions might be incorporated, although some logistical matters, like having to stay on the main campus for an extra year, will probably change anyway.

The emotions which accompanied the students' experiences, and which emerged from

the data most prominently, are discussed in the following section.

7.3.3.4 Emotions experienced during the programme

The four kinds of emotion which were experienced by the students were frustration, boredom, confusion and feelings of unfairness. The latter was mainly due to practices in the system, rather than to any unjust treatment by another person.

As expressed directly in some of the quotations during the discussion of the foundation programme in previous sections, many students experienced frustration. However, the reasons for their frustration differed. Some students felt they were wasting their time by doing the longer course, while others felt there was not enough time to learn all the things which they needed to know. Once again, it depended on their educational background. Another cause of frustration was either the irrelevance of the extra work, or the fact that it was too easy. On the other hand, some students became frustrated because the work was too difficult and too much for them to handle.

Another emotion which was expressed both explicitly and implicitly in many of the remarks, was boredom. This often went hand in hand with frustration, when the course content was not stimulating or considered to be a repetition of their matric work. Some students also mentioned boredom as a reason for their poor attendance of extra classes.

> " ... there is too little variation in the process ... students get bored, and do not attend anymore."

This remark further suggests that if there is no perceived benefit in attending the extra classes, the students stay away. This trend was also indicated in relation to the attendance of mainstream classes (see 7.3.1.1).

Confusion was not only experienced when two lecturers presented the same work. There was also lot of confusion which was caused by not understanding the work due to the language, or because it was too difficult. This was often not expressed directly by the students, but it was evident in the comments they made.

The perceived unfairness of the system was mentioned in relation to struggling with courses which were considered irrelevant, as was mentioned in connection with physics. The fact that students had no choice regarding the courses which they had to follow during the foundation programme, was considered to be unfair. The inclusion of students who had good matric results, and performed well during the bridging programme, in the foundation programme was also considered unfair.

> " ... when you are not going to do a subject in your course, then you must at least have a choice whether you want to do it as a help course during the foundation programme ... "
>
> " ... if you can pass with some high marks, then you are not supposed to continue with the foundation programme, that proves that you can go straight into your first year ... but I realise there is nothing like that ... "

These remarks indicate that the purpose of the bridging and foundation programmes is not communicated sufficiently to the students. However, the perception that there is no choice, whether true or false, also suggests that students should be informed clearly about the available options, to enable them to make an informed decision about the course that they should follow.

In spite of the negative emotions mentioned above, there were also many students who expressed their satisfaction with various aspects of the foundation programme.

> "If I did not change to this programme, I would have left. I would not have been here at all today."

It was mainly the weaker students who said that the programme helped them a lot, and who were satisfied with the contents and the level of the courses. This indicates the importance of firstly, designing programmes with full awareness of the needs of the specific target group; secondly, not trying to satisfy diverse needs with one programme and, lastly, making sure that the process of selecting students who should follow this programme identifies students with the kinds of need which the programme has been designed to address.

The last cluster of themes that emerged from the data, were those related to factors

that influence the students' academic progress.

7.3.4 Themes related to factors that influence academic progress

The higher level categories for the themes related to the factors that influence the students' academic progress, and which are illustrated in figure 7.4, are academic activities, personal matters, factors related to the University, students' accommodation, support systems, and affective factors. Educational background and staff-student relationships were themes that emerged very strongly from the data, and which are directly related to academic progress, but no sub-categories had been identified to fit these two themes.

7.3.4.1 Educational background

This is a very important theme of the study. The main reason for the establishment of the bridging and foundation programmes is the difference in the educational background of students who enter the University. Students taking part in these programmes were fully aware of the effect of their insufficient academic preparation on their progress, but not one of the respondents used this as an excuse for not having to take responsibility for their own progress. Neither did anybody make any accusations against the system, nor adopt a helpless attitude with the expectation that they should be treated differently because of their poorer educational background. This positive attitude was reflected continually in the remarks by the respondents, although they often referred to their educational background to explain why their experiences in the higher education environment were different, or why they were struggling more than some of the other students.

" ... it is very different from school, and I find it difficult ... I think, maybe it is my educational background ... "

" ... and that's for people who don't know, like myself ... I also found the introductory courses very helpful, because ... I didn't do physics and chemistry at school ... but I still find it difficult ... "

" ... I don't think they must make it easier ... they must rather give us an introduction to the work we should know ... OK, that [educational background] is a drawback, but that is what we must overcome, we must not concentrate on that ... "

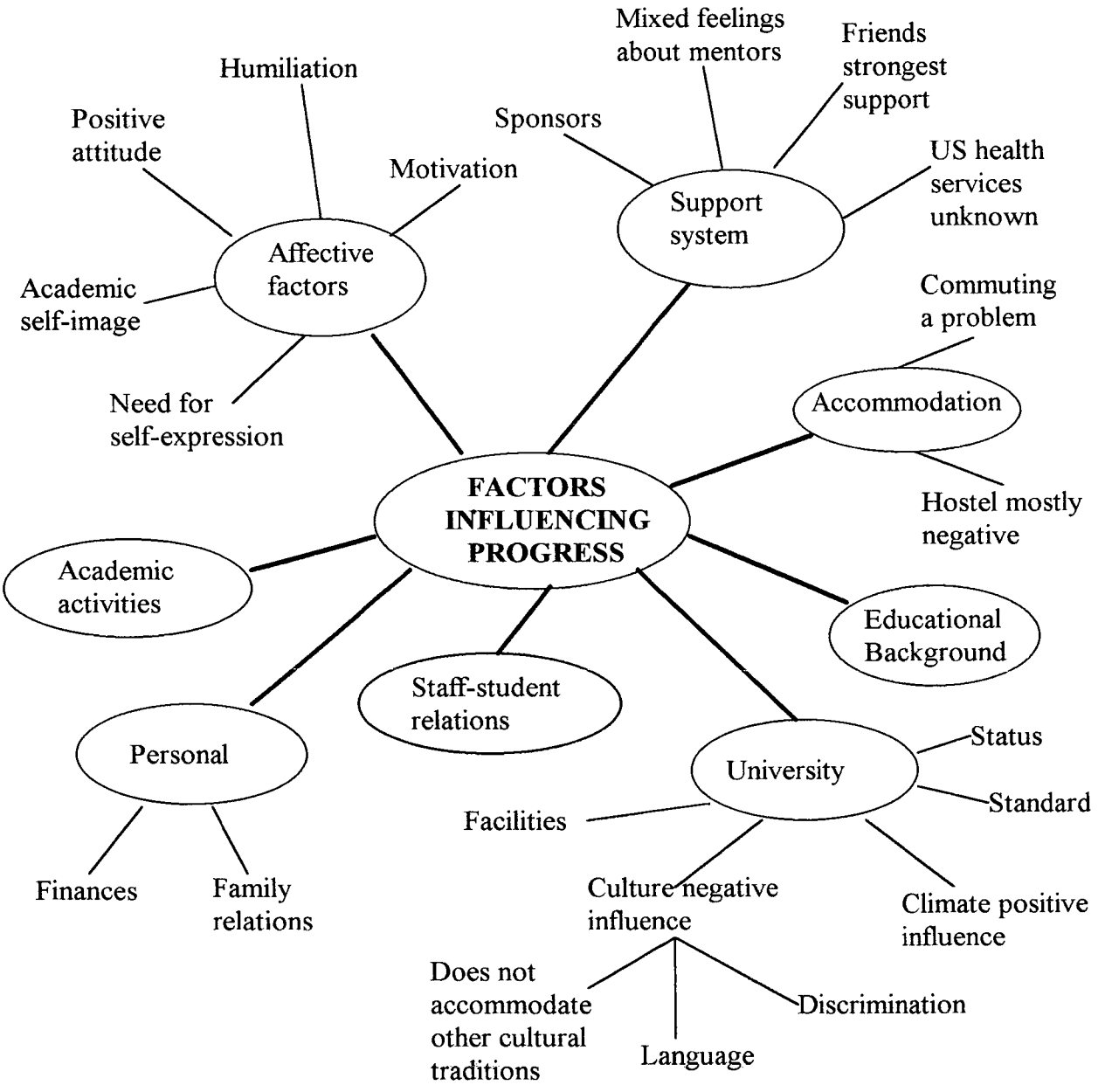


Figure 7.4: Classification of themes related to the factors that influence progress

Apart from the students' educational background, that is, their academic preparation, the quality of the students' academic activities is a strong determinant of their academic success. The quality is affected by their own input, as well as by staff-student relations. The influence of the students' academic activities and the importance of staff-student relations were discussed in detail earlier in this chapter see (7.3.1), and will not be repeated here.

The following theme that will be discussed is how factors related to the students' personal lives affected their academic progress.

7.3.4.2 Personal factors

The two aspects mentioned here were finances and family relations. Most of the students had received bursaries, and did not have serious financial problems regarding the payment of their course fees. The fact that they received bursaries, and realised that they would forfeit them if they failed, was an additional motivational factor to them.

> " ... the bursary money which I am getting ... it helps me, because I know I can't waste this money ... I was given some money to do a task, and I have to now give the results ... "
>
> " ... having a bursary actually forces one to work hard ... "

Many students did not get much encouragement from home. Others said that their parents do support them, but that they do not really understand what it is all about. It is also sometimes difficult for the students to explain why they do not have the time or the money to do certain things which their parents expect from them.

> "sometimes personal problems of family members interfere with my studies ... such things can take a lot of time ... "
>
> " ... first, my mother expected me to come home as breadwinner ... so what I'm doing, I'm working ... just to get some bucks to send home ... but when they call and say there is no food at home, that's the pressure on me ... because I know when my mother says that, she really needs it ... but she is really committed to me studying, but then she doesn't understand when I talk of the situation ... "
>
> " ... the pressure that you get from home ... like I know my mother is living in a shack ... I must complete my degree, to work for her ... but at the same time, it encourages me to study very hard, to make sure that I take her out of the shack and bring her in a house ... "
>
> " ... I'm always worried about my children. I don't like ... where they are - especially the school ... I can see how I am struggling ... if they stay there, they also find the same problems with their studies in future ... "

" ... the place where I live ... the woman does not like it when I stay there over week-ends ... and I am not really welcome at home ... but I've learned to cope with that ... "

Although broken homes and poor family relations are not unique problems which are experienced only by the participants in this study, some of them do have family responsibilities which are not common to the rest of the student population. Another aspect which is also not unique to this group, but which is a factor that often influences students' academic performance, is their accommodation.

7.3.4.3 Accommodation

Some of the respondents stayed in a University residence, but most of them made use of private accommodation, or stayed at home. Some of the students who stayed in a hostel considered it a negative experience, mostly because of exclusion by other students, or because of discrimination. This will be discussed in more detail later on (see 7.3.4.4). However, there were also students for whom being in a hostel was a positive experience.

Students who made use of off-campus accommodation, experienced mainly two kinds of problem, namely, those related to the fact that they have to commute, and the lack of a convenient place to study. The commuter students mentioned the expense, inconvenience and time wasted on travelling, as well as the safety aspect of having to travel by train after dark.

" ... like if you write a test at night, someone has to fetch you, because you cannot travel by train as a woman alone at night ... "

Commuter students on the Tygerberg campus also had no place to study in the evening, because the library closes at 18:00.

" ... we have to leave here at about six, just to go home and study ... and you can't even study at home, because there are like eight people in your family, and how do you study at home? So we prefer to study here ... "

" ... when the library closes, then you have to go down and sit in your car where you are alone, and the light is bad ... and it is not safe like that ... "

> " ... You feel quite safe in the library but six 'o clock when it closes, you have to go down to the first floor ... when I am alone in one of those big lecture halls at say nine 'o clock, I don't feel nice ... "

This problem will probably be addressed, if the discussions about a study centre at the Medical Faculty materialise. However, the fact that the library closes so early, and that the students say that they do not have problems in getting hold of books, is perhaps an indication that there is not much self-directed learning included in the teaching practices of this faculty. In other words, with about twenty hours of contact sessions per week, and no students needing the library to get books after 18:00, students probably do not use the library regularly for purposes other than studying their own notes there, probably because it is not expected of them to do much additional reading for their courses.

The situation regarding facilities is quite different on the two campuses. During the week, the library on the main campus is open till 24:00 for study purposes, while the lending services close at 22:30. Apart from the library, there are also other factors related to the organisation which affect the students' academic progress.

7.3.4.4 Factors related to the University

In this category the themes identified in the transcripts, as indicated in figure 7.4, relate to the status, standard and facilities of the University, the organisational culture and climate, language issues and discrimination.

The total image of the University, that is, its standard, status and facilities, was the reason why many of the respondents applied for access to the University. Another reason mentioned specifically during the interviews was that the climate of the University was conducive to learning, in contrast to other campuses where there is often student unrest. Some of the students had also applied to UCT, and were either not accepted, or were informed first by the US that their applications had been successful. Most of the students were proud to be at the University, and even the few who had no choice, because no other university offered the course for which they were enrolled, were aware of the quality of the facilities, and the status of the US.

However, these latter students were in most cases not committed to the institution, mainly due to a lack of integration.

" ... like if I am at home, I never think of Stellenbosch, and that seems to me that one day, I wish I can finish and go out of this place ... "

" ... when you are a student, this is of the best years of your life ... and you want to enjoy it, but Stellenbosch does not give us that chance ... "

" ... when I leave home its fine ... once I get to Stellenbosch, I get this whole feeling ... I just go down ... "

The reasons behind all these remarks were feelings of isolation - of not belonging.

" ... they want to know why did you come to Stellenbosch, and you feel that you don't belong here ... you go to the library, they ask you, are you from Kayamandi ... but we are coping, because we are used at all this kind of talk ... "

" ... if you are not from around here, you are isolated ... "

" ... only when you are in a clique, then you have that sense of belonging ... "

" ... even from the lecturers you get that thing ... they tell you, 'why did you come here? First of all, you know this is an Afrikaans university' ... "

This last remark links onto the language issue, which causes serious problems, especially for *African* and Indian students. The following remarks by them illustrate how the fact that these students do not understand Afrikaans properly, or in some cases almost not at all, affects their learning. The first few quotations show the students' embarrassment at having constantly to interrupt the class to ask questions.

"...you don't feel you want to - like that - 'excuse me, what is that word that you used there?' ... "

" ... even the announcements in Afrikaans ... so I just - 'oh please can you' ... also just like it was getting too much please, please, please, every day."

" ... you ask a question, now the lecturer will answer you, but now he starts to realise this is a person who needs to get the information in English. Whenever he talks, he will ask you do you understand ... then you see you don't feel that spirit there ... "

The following remarks refer to a more serious problem, namely their inability to follow what is going on in class, and how they try to cope with the situation.

> "I go there and I just sit, and I feel bad when I consider, this person is **explaining** something to others, and I don't get a word ... "
>
> " ... it was so hard to sit there and grasp what was happening - it was terrible ... besides having the work to do like all the Afrikaans-speaking people ... I have to first translate my notes and that takes up at least like half my time, and then go and study them. It's really hard to do it that way."
>
> " ... it is so difficult to perform like other students ... unless we just have the English lectures ... after the lecture you did not hear anything, you are even more confused. You have to sit down and translate whatever was given so that you can get the notes, and then start learning ... "

The fact that students first have to translate their notes, before they can even attempt to understand the contents, is a restriction on their learning imposed by the system. Apart from the time that is spent in translating their Afrikaans notes, the quality of the initial note-taking during class in a language with which the student is not familiar, is dubious. So the time is doubly wasted, because the student is probably translating something which might still not make much sense, however good the translation of it might be. It is not that the University does not try to help these students, it offers support in the form of a basic course, which students can follow to learn Afrikaans. But doing this, causes other problems.

> " ... if a person takes the basic Afrikaans course ... it takes your time, the little space that is there ... and it is very difficult for a person to learn a language, at the same time learn a subject ... "

Unfortunately the information that these students get before they arrive at the University is not always completely correct, with the consequence that they do not really know exactly what they are letting themselves in for, when they apply for access to the US.

> " ... when we were filling in the application forms ... there was the promise that Forestry will be taught in English, so there will be provision for

> English-speaking students as well. That is why I sent my forms in ... I am not saying that Forestry is not taught in English ... but it is only the subjects that we are taking at the Faculty."

To meet the degree requirements, students sometimes have to take courses in a faculty other than the one they are enrolled in. Some of the lecturers in other faculties, where these additional courses are presented, are not very accommodating.

> " ... I suppose, I found that it is a problem that the language policy of this University is Afrikaans ... sometimes someone will just come to the lecture hall and start, from A to Z it is all Afrikaans ... even the announcements ... so one day I went there ... 'sorry, my dear, you are at the wrong university. The language policy of this University is Afrikaans, and I'm doing what is expected of me' ... oh, I felt bad from then. I went straight to the telephone box, and I phoned my **own** people ... "

There is no easy solution to this problem. Experiences like this add to the students' feeling of not belonging, and to their existent reluctance to ask for assistance. As mentioned before, (see 2.5.3), the students' level of integration into the system, as well as commitment to the institution, determine their decision to persist. However, if the University is concerned about its drop-out rate, and at the same time opens its doors to English-speaking students who do not understand Afrikaans properly, some agreement should be reached which would accommodate both the lecturers who refuse to speak English and the students who cannot understand Afrikaans. If this is not done the completion rate will decline, no matter how many other support systems are in place.

The language policy of an organisation is just one of several aspects of its culture. The culture of the University is experienced negatively by many of the students who took part in the bridging and foundation programmes - even those students who have no problem with Afrikaans as medium of instruction. The students felt excluded from the social activities on campus, and mentioned that there was no understanding for their need to express themselves. That drives them off-campus to take part in activities which are part of their culture.

" ... certain people like ... doing certain things at certain times ... for instance we like playing soccer, and to this people here, soccer is not ... we grew up with soccer, it is our first choice of sport ... but we were chased away wherever we tried to play ... I mean you have to cater for everybody ... "

" ... no we do not do it like that, we think it is too Afrikaans-like (*boererig*) ... the white people do that, we don't ... we like our own type of dancing ... but we don't do it here ... "

" ... even when you go to functions, you don't feel comfortable ... "

" ... we don't have a chance to express ourselves ... where students go to dance, we have to adapt to go there for a dance ... what we used to do on Saturdays ... that is not here ... "

From these examples given by different students, one realises that the University does not accommodate all cultures represented in its student population. However, one has to put the whole culture issue into perspective. The different cultural groups are probably not going to merge on campus, at least not in the near future. What should rather be promoted is respect and tolerance from all parties concerned for the various cultures, and an attempt to give the different groups the opportunity to establish on campus the kind of activities which form part of their culture. Even if certain activities are only attended by certain groups, this might contribute to the students' sense of belonging, and increase their commitment to the institution. There are already some cultural associations on campus which are mainly supported by a certain cultural group - for example DASUS, the organisation on campus for German speaking students. Other groups of students should be encouraged to form their own associations on campus.

The last theme in this category of factors related to the University, is racial discrimination. Some of the students reported incidents of overt racism. However, what they experienced were mostly subtle forms of discrimination. The places where it occurred most often were in the hostels or in pubs, and mostly in the form of verbal abuse. Due to the fact that many students do not know how to handle the situation, there are sometimes signs of over-compensation by white students. The irony is that

being too friendly is often experienced as being false. However, the often over-sensitive reactions on both sides will probably normalise over time, as all the students become more used to diversity in South African schools, as well as in the university classroom and on campus. The focus of the University should be on promoting a *learning* culture with which all students can identify. At the same time more knowledge, understanding, and accommodation of other cultures and traditions, should be encouraged, to ensure better co-operation between the various groups of students.

The next group of factors that affect students' academic progress to be discussed, are the various formal and informal support systems which are available to the students.

7.3.4.5 Support systems

Apart from the bridging and foundation programmes, the University also has other formal support services for students. These include, inter alia, protection and mental health services, counselling services for personal and study problems, and a careers office, where they can get advice regarding the job market and how to promote themselves as prospective employees. Unfortunately many students are unaware of especially the protection and health services, or they are reluctant to make use of these services.

Some of the official sponsors from whom the students receive bursaries have either informal or formal support systems available to their bursary holders. ESCOM has a mentor system, which is quite well received by the students, although only a few of them make use of this facility.

> " ... especially during the first semester, when I knew nobody and did not feel free to ask other people when I had a problem ... it was nice ... once a week my ESCOM mentor worked out problems with me ... "

The Division for Academic Development Programmes has recently started a mentor system to offer students the opportunity to discuss their problems with senior students to whom they can relate. Students were asked during the interviews, whether they know about these mentors, and how they feel about such a system. Most of the

students were unaware of the existence of this support system, and others had reservations about talking to someone whom they didn't know, although they could all see the merit of such a facility. The most common reply was that they would prefer to choose their own mentor, rather than having a mentor appointed to them just because he or she is studying in the same faculty, and that the mentors should rather be senior students than a lecturer. However, most of the respondents prefer to talk to their friends.

A general trend in all faculties was the study and emotional support students received from their friends. Even when the students mentioned that they experienced feelings of not belonging to the University community, and of isolation, most of them had a few friends on campus who encouraged them and with whom they could discuss their academic and other problems.

> " ... most of my friends ... stay just opposite me, so practically every day I'm around them ... and whenever I've got a problem, I just talk to them ... it really helps me a lot ... "
>
> " ... myself, I don't just sit there ... when I feel that I have a problem, I go to my friend ... "
>
> " ... last semester I was very cross ... then I went to my friend, and we chat and we chat ... after that I was relieved ... "
>
> " ... in the beginning I was clueless, but then I found a friend ... "

The academic value of friendships on campus was also illustrated during the discussion of out-of-class academic activities (see 7.3.1.2). This natural tendency of students to ask their friends for assistance should be utilised as a basis for the establishment of formal learning teams. If part of the culture of learning could be learning together by discussing the work out of class, also in a formalised way, all students would benefit. Those students who do not understand something during contact sessions will understand better if their peers are able to explain it to them, while those who do the explaining will also gain from the experience, because to explain to someone else enhances one's own understanding of whatever one is trying to explain.

The last category of themes to be discussed deals with affective factors that affect students' academic progress.

7.3.4.6 Affective factors

The themes in this category are motivation, a positive attitude, the need for self expression, academic self-image, and feelings of humiliation. The last two themes listed here, have already been discussed in relation to affective factors which accompanied the students' academic activities (see 7.3.1.4), while the need to express themselves has been discussed with factors related to the University (see 7.3.4.4).

Many of the students who took part in this study had a positive attitude and were very motivated to succeed. Unfortunately there were exceptions, and in some cases probably also some unrealistic expectations. However, in spite of several negative experiences, some of the students were still amazingly positive. Their attitudes are illustrated by the following examples.

> " ... I know what I am doing ... when I walked into Stellenbosch, I told myself, 'this thing I am going to finish in three years, not five, not six' ... I don't like failure ... "

This student went straight into the mainstream after the bridging programme, and obtained a degree within three years. She probably should not have attended the bridging programme in the first place, but mentioned during the interview that she was wondering whether she should attend, but decided to do it in any case and benefited greatly from the experience socially, although not academically. The fact that she decided to take part in the bridging programme, despite her positive attitude and the fact that she had initially wondered what she was doing there, also signifies some insecurity about her own judgement of her academic capabilities. This is, however, not unique, because the novelty of the situation creates occasional feelings of academic insecurity in many first year students (Troskie, 1996:109).

Other examples of motivation or a positive attitude and a positive academic self-image are the following.

> " ... I have a very strong will ... so, no matter what anybody says, I know I

can do that ... nobody is going to change my mind about it ... "

" ... not everything on campus is right, but one must live past that ... I feel one must first think about why you are here ... to get a degree ... "

" ... before the course started, and its like a very difficult course, and very few people passed, I thought, 'gee we did well' ... "

In most cases there was no direct expression which indicated either a positive or a negative attitude, and many students were positive about some experiences and negative about others. However, the overall impression was that most of the students were motivated to succeed, and that they coped with difficulties on campus by joking about them among friends and by trying to adopt a positive attitude. This also has to be put into perspective. The timing of the interviews probably contributed to this impression of positive, motivated students. Most of the interviews were conducted during the second semester. The students who were negative and demotivated had probably already left the campus during, or at the end of, the first semester.

Unfortunately, no students who had dropped out of the system were interviewed. Although it was originally planned as part of the research, the interviews were not conducted due to unrest in the suburbs where these students live. This is an aspect which needs to be investigated during follow-up research. This study investigated the experiences of students who are still in the system. Those who dropped out, probably also had other, different experiences which influenced their decision to leave the University.

This discussion concludes the second level of the analysis. During the next stage of the analysis, the trends and provisional conclusions must be verified.

7.4 Verification of findings across faculties and performance groups

To verify the findings it was not sufficient to only identify the patterns and trends in each faculty. It was necessary to establish which general trends and patterns emerged across faculties. This could give an indication of differences in the needs of students studying in different disciplines as well as of general needs experienced by some

students in all faculties. In order to establish whether students' initial performance level when they entered the University influenced their perceptions of certain aspects of the university environment, the findings were also compared across performance groups.

All the themes that were identified in the four broad categories, did not necessarily appear in all faculties or in all performance groups. The frequency and intensity of experience of the general themes which did occur also differed. In this section the aim is to establish which of the identified themes could be considered a general trend across faculties and which across performance groups.

To facilitate the comparison of trends across faculties with trends across performance groups the results are presented together in tables 7.2 to 7.9 in the four categories of themes, namely academic activities, the GBP, the FP and factors affecting students' academic progress. The results across performance groups are not only presented in the four performance categories, top, high, medium and low, but are sub-divided to reflect the differences in *African* (A) and *Coloured* (C) students' responses. The *Coloured* subjects included *Coloured*, Indian and Malay students.

7.4.1 Verification of findings relating to academic activities

The results of the comparison of findings regarding the various aspects of students' experience of academic activities are illustrated in table 7.2 (across faculties) and 7.3 (across performance groups).

Four themes could be verified across faculties and across performance groups. Two of these themes were related to the classroom environment, namely that students were reluctant to ask questions in class and that they were encouraged by good staff-student relationships. The other two general themes were related to out-of-class learning (ask friends for help) and to affective factors (academic self-image). These themes can both be linked to students' reluctance to ask questions in class. This will be discussed in more detail later on (see 7.6). There were no general experiences regarding assessment.

The conclusion that can be drawn at this stage regarding academic self-image is that

there were signs of the influence of both a positive and a negative academic self-image on student's behaviour across faculties. During the next stage of the analysis, when the emerging patterns will be established, the relationship between the nature of the students' academic self-image and their accompanying behaviour will be explained (see 7.6).

Table 7.2: Comparison across faculties - academic activities

Theme	Grp 1a (For)	Grp 1b (Nat)	Grp 2 (E&M)	Grp 3 (M&D)	Grp 4 (Eng)
ASSESSMENT					
Peer feedback	x	-	-	-	-
Unclear expectations	x	-	-	-	x
Need more feedback	x	-	-	-	x
CLASSROOM ENVIRONMENT					
Lecturer's inability to explain	-	-	-	x	x
Cannot understand - stay away	x	-	-	-	x
Reluctant to ask questions	x	x	x	x	x
Encouraged by good staff-student relations	x	x	x	x	x
OUT-OF-CLASS LEARNING					
Realise academic responsibility	x	x	-	-	x
Effort often more than results	x	x	x	x	x
Realise need for thinking skills	-	-	x	-	-
Study methods changed	x	x	x	x	x
Ask friends to help	x	x	x	x	x
Strategic studying	-	-	-	-	x
AFFECTIVE FACTORS					
Academic self-image	x	x	x	x	x
Humiliation	x	x	x	-	x
Conflict: dependence/responsibility	x	-	-	-	x

An x indicates the presence of a theme in the faculty grouping.

As indicated in table 7.2 there were two other themes related to out-of class learning that could be verified across faculties only. These were that students often viewed their results as not being equal to their effort, and that the study methods which they used at university were different from those used at school.

What is noteworthy about the difference between the findings in tables 7.2 and 7.3 is that *Coloured* students in the top and high categories changed their study methods. The student in the low category was a highly motivated student who went into the

mainstream after the GBP and obtained a degree within the minimum required time.

Table 7.3: Comparison across performance groups - academic activities

Theme	Top		High		Med	Low	
	A	C	A	C	C	A	C
ASSESSMENT							
Peer feedback	-	x	-	-	-	-	-
Unclear expectations	x	-	x	x	x	-	x
Need more feedback	x	x	x	x	-	-	-
CLASSROOM ENVIRONMENT							
Lecturer's inability to explain	-	x	-	x	-	-	-
Cannot understand - stay away	x	x	-	x	x	-	-
Reluctant to ask questions	x	x	x	x	x	x	x
Encouraged by good staff-student relations	x	x	x	x	x	x	x
OUT-OF-CLASS LEARNING							
Realise academic responsibility	-	x	-	x	x	-	-
Effort often more than results	x	-	-	-	x	-	-
Realise need for thinking skills	-	x		x	-	-	-
Study methods changed	-	x	-	x	-	-	x
Ask friends to help	x	x	x	x	x	x	x
Strategic studying	x	x	-	x	x	-	-
AFFECTIVE FACTORS							
Academic self-image	x	x	x	x	x	x	x
Humiliation	x	x	x	x	-	x	-
Conflict: dependence/responsibility	-	x	-	x	x	-	-

An x indicates the presence of a theme in the faculty grouping.
A - *African* students C - *Coloured* /Indian/Malay students

The next broad category of findings to be verified are those relating to the GBP.

7.4.2 Verification of findings relating to the Gencor Bridging Programme

The results of a comparison of the identified themes related to the GBP (see figure 7.2) across faculties and across performance groups are presented in tables 7.4 and 7.5.

There was only one theme that could be verified across faculties and across performance groups. This related to the social value of the programme, namely that all interviewees made friends during the four-week programme.

Table 7.4: Comparison across faculties - GBP

Theme	Grp 1a (For)	Grp 1b (Nat)	Grp 2 (E&M)	Grp 3 (M&D)	Grp 4 (Eng)
CONTENTS					
Inappropriate workload	x	x	x	-	-
Computer training beneficial	x	x	-	-	-
Mathematics beneficial	x	x	-	-	-
Repetition of matric work	x	x	x	x	x
ACADEMIC VALUE					
Peer learning in group work	x	x	x	-	x
Peer feedback	x	-	-	-	-
Almost no transfer of skills	-	x	-	-	x
Orientation to university	x	x	-	-	x
SOCIAL VALUE					
Support group	x	x	-	-	-
Make friends	x	x	x	x	x
AFFECTIVE FACTORS					
Improved self-image	x	-	-	-	-
Encouragement from ADP staff	x	-	x	-	-
Sense of belonging	x	-	-	-	-

An x indicates the presence of a theme in the faculty grouping.

Table 7.5: Comparison across performance groups - GBP

Theme	Top		High		Med	Low	
	A	C	A	C	C	A	C
CONTENTS							
Inappropriate workload	x	-	-	x	x	-	x
Computer training beneficial	-	-	x	x	x	-	-
Mathematics beneficial	-	-	-	x	-	-	x
Repetition of matric work	-	x	-	x	x	-	-
ACADEMIC VALUE							
Peer learning in group work	-	x	-	x	-	-	x
Peer feedback	-	x	x	x	-	-	-
Almost no transfer of skills	-	-	-	x	x	-	-
Orientation to university	-	-	x	x	-	-	-
SOCIAL VALUE							
Support group	-	x	x	-	-	x	x
Make friends	x	x	x	x	x	x	x
AFFECTIVE FACTORS							
Improved self-image	-	-	-	-	x	-	x
Encouragement from ADP staff	-	-	x	-	-	x	-
Sense of belonging	-	-	-	-	x	-	x

An x indicates the presence of a theme in the faculty grouping.
A - *African* students C - *Coloured* /Indian/Malay students

All students valued the opportunity to make friends during the programme. However, not all of these friendships lasted and/or were considered a part of their support system on campus during their later study years. A general trend that could be verified across faculties only (table 7.4) was that students experienced the content of the GBP as a repetition of their matric work. This was positive for some and negative for others.

7.4.3 Verification of findings relating to the foundation programme

The results of a comparison of the identified themes related to the foundation programme (see figure 7.3) across faculties and across performance groups are presented in tables 7.6 and 7.7.

Table 7.6: Comparison across faculties - FP

Theme	Grp 1a (For)	Grp 1b (Nat)	Grp 2 (E&M)	Grp 3 (M&D)	Grp 4 (Eng)
Time consuming	x	x	x	x	x
CONTENTS					
Duplication matric	-	-	x	x	x
Duplication later courses	-	-	-	-	x
Does not prepare for mainstream	-	-	x	x	x
Irrelevant	-	-	x	x	-
METHODS					
Groupwork new, but realise value	x	x	x	x	x
2 lecturers - confusing	-	-	x	-	x
Senior student -effective	-	-	-	x	-
STRUCTURE					
Inappropriate duration of courses	x	-	-	x	x
Courses too long	x	x	-	x	x
No follow-up	x	-	x	-	-
Ineffective time scheduling	-	-	-	x	x
Credits/weight attached to courses	-	-	-	x	x
Inappropriate workload	x	-	-	x	x
EMOTIONS					
Frustration	x	x	x	x	x
Boredom	-	-	x	-	x
Confusion	x	-	-	x	x
Satisfaction	x	x	x	-	-

An x indicates the presence of a theme in the faculty grouping.

The students' experience of the FP was very varied. Only two themes could be verified

across faculties and across performance groups. The time involved in participating in the FP was a general problem mentioned by all students. All students experienced and expressed frustration, but the reasons differed. Some students considered the FP a waste of time because they felt it was a repetition of their matric work and did not prepare them for the academic second year. For others the workload was too heavy and the level of the work too difficult to master it all in the available time. The cause of their frustration was sometimes related to the methods employed and sometimes the time devoted to the programme.

Table 7.7: Comparison across performance groups - FP

Theme	Top		High		Med	Low	
	A	C	A	C	C	A	C
Time consuming	x	x	x	x	x	x	x
CONTENTS							
Duplication matric	-	x	-	x	-	-	-
Duplication later courses	-	x	-	x	-	-	-
Does not prepare for mainstream	-	x	-	x	-	-	-
Irrelevant	-	x	-	x	-	-	-
METHODS							
Groupwork new, but realise value	-	-	-	x	x	-	-
2 lecturers - confusing	-	x	-	x	-	-	-
Senior student -effective	-	x	-	x	-	-	-
STRUCTURE							
Inappropriate duration of courses	x	-	-	x	-	-	-
Courses too long	-	-	-	x	-	-	-
No follow-up	-	-	x	-	x	-	x
Ineffective time scheduling	-	x	-	x	x	-	-
Credits/weight attached to courses	-	x	-	x	-	-	-
Inappropriate workload	-	x	x	x	-	x	-
EMOTIONS							
Frustration	x	x	x	x	x	x	x
Boredom	-	x	-	x	x	-	x
Confusion	x	x	-	x	-	-	-
Satisfaction	-	-	x	-	-	x	-

An x indicates the presence of a theme in the faculty grouping.
A - *African* students C - *Coloured* /Indian/Malay students

There was an additional theme related to the methods used during the FP that was present in all faculties (see table 7.6). Students realised the value of groupwork not only because it provided interaction with fellow-students and the opportunity for peer

learning, but it was also mentioned that it prepared them for teamwork which they will need in a work situation once they have graduated. What is noteworthy is the similarity between the responses of students from the Faculties of Engineering and of Medicine and Dentistry.

7.4.4 Verification of findings relating to factors that influence academic progress

The results of a comparison of the identified themes related to factors that influence students' academic progress (see figure 7.4) across faculties and across performance groups are presented in tables 7.8 and 7.9.

Three themes could be verified across all faculties and across all performance groups. There were students in all groups who considered their friends to be their strongest support system. The other two factors that were found to influence students' progress were their academic activities and academic self-image.

As indicated in table 7.8 there were several general trends related to student progress that were identified across faculties only. There were also some themes that were present in all but one of the faculty groupings. It was not always the same faculty in which the trend was absent. The factors that were not part of a specific category, but which were identified as trends in all the faculties, were academic activities (see 7.4.1) and staff/student relations. For the latter category, the findings were the same across all faculties. Good relations had a positive influence, while poor staff-student relations affected academic progress negatively. However, staff-student relations were often considered to be poor because of students' reluctance to approach lecturers after class. Students assumed they would get no help, without actually asking for assistance.

The themes identified across faculties which were related to the University, were students' perception of the University's status, academic standard and facilities. The perception of the status of the University and the availability of facilities had a positive effect on students' academic performance. Students had the perception that obtaining a qualification from the US would increase their chances of employment, while facilities such as the library and access to computers could help them to perform better.

The affective factors that were present in all faculties were a positive attitude and the motivation to succeed.

Table 7.8: Comparison across faculties - factors affecting progress

Theme	Grp 1a (For)	Grp 1b (Nat)	Grp 2 (E&M)	Grp 3 (M&D)	Grp 4 (Eng)
Academic activities (see table 7.2)	x	x	x	x	x
Educational background	x	-	-	-	x
Staff-student relations	x	x	x	x	x
PERSONAL					
Family relations	x	x	x	-	x
Finances	x	x	x	-	x
UNIVERSITY					
Status	x	x	x	x	x
Standard	x	x	x	x	x
Facilities	x	x	x	x	x
Climate positive influence	-	x	x	x	x
Culture negative influence	x	-	x	-	-
Discrimination	x	x	-	-	x
Language	x	-	-	x	-
Does not accommodate other cultural traditions	x	-	x	x	-
ACCOMMODATION					
Hostel mostly negative	x	-	-	x	x
Commuting a problem	-	x	x	x	x
SUPPORT SYSTEMS					
Sponsors	-	-	x	-	x
Mixed feelings about mentors	-	x	x	-	x
Friends strongest support	x	x	x	x	x
US health services unknown	-	x	x	-	x
AFFECTIVE FACTORS					
Motivation	x	x	x	x	x
Humiliation	x	x	x	-	x
Positive attitude	x	x	x	x	x
Academic self-image	x	x	x	x	x
Need for self-expression	x	-	x	x	-

An x indicates the presence of a theme in the faculty grouping.

It is important to remember that the verification of themes does not imply that the presence of a theme in a specific group can lead to the conclusion that it applies to all members of that group. It only indicates that a specific phenomenon occurs in that group. Before any generalisation can take place, it has to be established under what

circumstances and conditions the theme is present. This will become clearer during the discussion of patterns and trends (see 7.5).

Table 7.9: Comparison across performance groups - factors affecting progress

Theme	Top		High		Med	Low	
	A	C	A	C	C	A	C
Academic activities (see table 7.2)	x	x	x	x	x	x	x
Educational background	x	-	x	-	-	x	x
Staff-student relations	x	-	-	-	x	x	x
PERSONAL							
Family relations	x	-	x	-	x	x	x
Finances	-	-	-	-	x	-	-
UNIVERSITY							
Status	-	-	-	-	x	-	x
Standard	x	x	x	x	-	-	x
Facilities	-	-	x	-	-	-	-
Climate positive influence	-	x	-	x	x	-	x
Culture negative influence	x	-	x	-	-	x	-
Discrimination	x	-	x	-	-	x	-
Language	x	x	x	x	-	x	-
Does not accommodate other cultural traditions	-	-	x	x	-	-	x
ACCOMMODATION							
Hostel mostly negative	-	-	x	x	-	x	-
Commuting a problem	-	x	-	x	x	-	x
SUPPORT SYSTEMS							
Sponsors	x	x	-	-	-	-	-
Mixed feelings about mentors	-	-	-	x	x	-	x
Friends strongest support	x	x	x	x	x	x	x
US health services unknown	-	-	-	x	x	x	-
AFFECTIVE FACTORS							
Motivation	-	x	x	-	-	x	x
Humiliation	x	x	x	x	-	x	-
Positive attitude	x	x	x	x	-	-	x
Academic self-image	x	x	x	x	x	x	x
Need for self-expression	-	x	x	x	-	-	x

An x indicates the presence of a theme in the faculty grouping.
A - *African* students C - *Coloured* /Indian/Malay students

This concludes the verification of findings across faculties and performance groups. Conclusions regarding the patterns and trends that emerged from the data and were verified are discussed in the following section.

7.5 Patterns and trends

Only a few of the patterns that were apparently present in the data could eventually be verified across faculties and/or across performance groups. It was often just one exceptional case that was absent. The sub-division of performance groups showed some within-group patterns across faculties. There was no information from *African* students in the medium performance group, in spite of repeated efforts to interview subjects in this performance category.

7.5.1 Patterns within performance and population groups

A further analysis of the information in table 7.3 indicates that in relation to academic activities there are some differences in the experiences and perceptions of students in the higher performance categories compared to their peers in lower categories. There are, however, both differences and similarities in the responses of *African* and *Coloured* subjects.

Related aspects of out-of-class learning are present in the top or high *Coloured* group, but not in similar *African* performance groups. *Coloured* students realised their academic responsibility, the need to develop thinking skills and they changed their study methods to adapt to the requirements of university study. However, they experienced inner conflict between being responsible and the comfort of being dependent. There were no *African* students in the top or high categories who mentioned that they realise that it is their own responsibility to succeed. This does not necessarily mean that they do not take academic responsibility. The differences in students' preparedness to become autonomous learners is a theme that should be investigated further.

African students in the top or high groups reported that they were not always sure what was expected from them. There were also *Coloured* students in the high category who felt the lecturers' expectations from them were unclear. Both *African* and *Coloured* students needed more feedback. Although the lack of proper feedback is a common problem more feedback would have enabled these students to assess their

understanding of the lecturers' expectations.

As indicated in table 7.5, there were few consistent differences in the various groups of students' experience of the GBP. What is noteworthy is that no *African* students considered the contents of the GBP a repetition of the matric syllabus, while *Coloured* students from all performance categories, except the low category, experienced it as a repetition. This is probably because the *Coloured* students attended better schools and thus had a better educational background.

The only other difference between performance groups were that more *Coloured* students from the top or high groups than their *African* peers realised the value of peer learning and peer feedback in groupwork. This might also be influenced by students' educational background. It is possible that the authoritative position of the teacher in *black* schools could make it more difficult for *African* students to adapt to the principle of peer learning. It was mentioned earlier in this section that *Coloured* students from the top or high categories were aware of the need to develop thinking skills. This implies that they would probably realise the value of peer feedback, since critical thinking is an essential skill in peer assessment and constructive peer feedback.

Students' perceptions of the FP are presented in table 7.7. There were distinct differences between the experiences reported by the different performance and population groups. The *Coloured* students from the top or high performance groups experienced the contents of the FP as a duplication of the matric syllabus and in some cases also a duplication of later courses. It was mainly Engineering students who complained about the duplication of a module in communication which they were obliged to take again in their third year. The other general complaint of students regarding the contents of the FP was that it did not prepare them for mainstream modules and that the contents of FP courses were sometimes irrelevant for the kind of knowledge that they needed during their second academic year.

The imbalance between the time intensity of the course and the few credits they could earn with FP assistance modules was a problem for the *Coloured* top or high performance groups. They also complained that different lecturers who presented the

same work confused them. These students found the time of year that specific modules were presented inappropriate. It was mainly M&D students who complained about the time-scheduling in relation to some of the mainstream modules. They felt that modules that were more relevant to their second academic year should be presented during the second historic year, and other modules which they considered less relevant, for example physics, should be moved to the first historic year.

Students in various performance and population groups complained about the workload. Students in the top or high categories wanted more mainstream modules during the FP and mentioned that they had problems to adapt to the heavy workload during their second academic year. Students in lower performance categories found the workload during the FP too heavy, especially if they had to follow additional language courses.

The different groups of students' perceptions of factors that affect their academic progress are reported in table 7.9. Factors that were mentioned by *African* students in all performance groups were family relations, discrimination and the culture of the University. Most of the *African* students expressed concern about their families at home, but mentioned that although their families did not understand the demands that studying at a university placed upon them, they supported them emotionally and encouraged them to succeed. *African* students from all performance categories experienced discrimination in both their social and academic lives and the culture of the University negatively affected their academic progress. The two main reasons for this negative influence were language problems and the attitudes of some of the academic staff.

The official language of the University created problems for students who did not understand Afrikaans, irrespective of their population or performance groups. Apart from the additional time that they had to spend in order to understand their class notes, the attitudes of some lecturers resulted in humiliating experiences in class. This discouraged them to ask questions in class or to approach lecturers after class.

In general students in the higher performance groups had a more positive attitude than

those in lower performance categories. However performance category did not determine students' academic self-image. Remarks by students in all categories indicated their insecurity about their ability to succeed. This resulted in some cases in reluctance to approach white students with questions out of class. Students also mentioned that they sometimes do not participate in classroom conversation because they did not want to appear "to be stupid".

7.5.2 General patterns and trends

There were not many definite patterns that could be verified across faculties and/or performance groups. The patterns that could be established were:

- If students had a relatively good educational background, their perception of the GBP and especially the FP was that it was a repetition of matric. These students emphasised the relatively low academic value of both programmes in relation to the time they had to devote to participation in these programmes. If students had a poor academic background, they considered both programmes to be academically beneficial, although they complained that there were especially during the GBP too many new concepts to assimilate within the short time available.
- Students with a positive academic self-image consulted both friends and lecturers regarding their academic problems. Students with a negative academic self-image asked only their friends for assistance with academic problems.

The following trends were verified across faculties:

- Friends were most students' strongest support system.
- Students were encouraged by good staff-student relations.
- Perceived out-of-class academic effort was not reflected in performance scores.
- Students who realised the need to change their school study methods to cope with the academic demands of the University attempted to do so. These were mainly *Coloured* students.
- All students relied on their friends for academic and emotional support.
- All students commented positively on the social value of the GBP.
- Although group work was new to them, the students realised the value of academic discussions with their peers, but few of them offered any comments on

peer feedback.

- Most students found the FP time-consuming and this caused frustration.
- Students in both high and low performance categories realised that their attitude and level of motivation influenced their performance.

Themes that were present in most of the faculties, but could not be verified across faculties, were the following:

- Students experienced humiliation in both the academic and social environments.
- Commuter students experienced problems regarding a place to study, as well as the time-scheduling of tests.
- *African* students reported more instances of discrimination than *Coloured* students.
- *African* students perceived the influence of the culture of the University on their academic progress more negatively than their *Coloured* peers.
- *Coloured* students' in all performance categories perceived the climate of the University, compared to that of some other universities where student unrest was a problem, as a positive influence on their academic progress.

7.5.3 General conclusions

There are a few general conclusions that can be drawn from the qualitative investigation. The first is that the GBP but especially the FP are experienced very differently by students from various population groups and performance categories. Secondly, the social value of both programmes were appreciated by most of the students. Thirdly the educational background of the students seemed to determine their perception of the academic value of the two programmes. fourthly, students rely heavily on friends within their own cultural group for both academic and emotional support. Fifthly, the culture and especially the official language of the University create problems for non-Afrikaans speaking students. These conclusions are more specific than the initial provisional conclusions arrived at during the level-one analysis (see 7.1), and in this sense qualify the provisional conclusions. However, more research is necessary to verify and expand these conclusions further.

7.6 Summary

In this chapter the analysis and results of the qualitative investigation were presented and discussed. Themes in four broad categories related to the University environment were identified and verified across faculties and across performance groups.

It must be emphasised that the aim of this qualitative investigation was to identify patterns and trends, not to arrive at definite conclusions. The "conclusions" mentioned in section 7.5 of this chapter should thus be interpreted with caution. A qualitative investigation in a relatively unexplored field should not attempt to confirm facts or theories it should merely indicate the direction for future research.

This was an investigation of students' perceptions about various factors related to academic development programmes at the University of Stellenbosch, to the US environment, and of their perception of the influence of these factors on their academic performance. Their actual academic performance at the US will be established by the findings of the quantitative investigation. The results of the quantitative research will be reported and discussed in the following chapter.

CHAPTER 8

ANALYSIS OF THE QUANTITATIVE DATA

The results of the qualitative data analysis indicated how some of the students who participated in the Gencor Bridging Programme (GBP) and/or the Foundation Programme (FP) of the University of Stellenbosch experienced the higher education environment. Some of the factors that influenced their academic progress were identified and discussed. In this chapter their actual progress, that is their academic performance as students of the University, will be described. The results of their final matric examination will be compared to their performance during their study years. This is done in two main sections with sub-sections, each with a different focus. In the first part of each main section the focus is on retention and the influence of the channeling function of the GBP. In the second part of each main section the influence of the GBP and FP as a combined academic development intervention is investigated.

8.1 The purpose of the quantitative data analyses

The quantitative component of the empirical research was designed to establish the effect of the GBP and FP on the academic performance of those students who were exposed to the developmental activities of these two programmes. The two programmes were investigated both separately and together.

Since the main purpose of the GBP is effective channeling of students into appropriate programmes (see 5.6.1) it is expected that students who participated in the GBP will stay in the system and be relatively successful. In order to establish whether the GBP students' performance compared favourably with that of their mainstream (MS) peers who did not participate in the GBP, a comparison of the performance of these two groups of students (GBP and MS) during the period 1995-1997 is made. The focus is on retention and fluctuation in performance level during each *historical* year. In this section all GBP students are investigated, irrespective of whether they moved directly into the mainstream or participated in the FP.

As a further indication of the influence of the channelling function of the GBP the performance of GBP students who went straight into the mainstream is compared with the performance of students who participated in the FP. In this section the GBP students are split into two groups and the performance of each group is investigated. The focus is on academic performance at the end of the first, second and third *academic* year, as well as on retention. This treatment of the GBP students as two separate groups can also provide some information about the influence of the FP in different faculties on students' academic performance. The performance of students who participated in both the GBP and FP in the various faculties will be viewed in comparison with the performance of selected mainstream students enrolled in the same faculties.

In the investigation of the influence of the GBP and FP together on academic performance the focus is primarily on the transition between the first and second *academic* years in all faculties and between the second and third *academic* years for Engineering students. During the second academic year GBP-FP, GBP-MS and MS students enrolled in the first three faculty groupings (Nat, E&M and M&D) have the same workload, while this is true for Eng students only by their third academic year. The reasoning behind this comparison is that after participation in the GBP and FP these students' performance should be on par with that of their mainstream peers.

Although completion rates would be an important indicator of the effectiveness of the academic development programmes, this can at this stage only be treated as a secondary focus, because of the limited available data. Since the GBP and FP only started in 1995 at the US (see 5.6) and graduation of ADP students after four years is only possible in some of the programmes in two of the faculty groupings under investigation, namely Natural Sciences (Nat) and Economic and Management Sciences (E&M), the period is too short to verify findings related to completion rates. However, some indication of the influence of academic development programmes on completion rates might be of value, and therefore this aspect is also investigated in this study.

The results of the assessment of the students' performance at various stages were

analysed in an attempt to answer specific questions. These questions were all aimed at establishing the overall effect of the GBP and FP and to assess to what extent they are successful academic development initiatives of the University of Stellenbosch.

8.1.1 The research questions

The purpose of the quantitative component of the research is to answer the following questions:

8.1.1.1 How do the GBP students' perform during their study years and is there a pattern in the fluctuation in performance at different year levels?

8.1.1.2 Does participation in the GBP and/or FP influence the retention of students?

8.1.1.3 To what extent can the differences in students' performance during their study years possibly be attributed to the nature of the FP in a specific faculty?

8.1.1.4 Does participation in the FP influence students' transition from the first to the second *academic* year?

8.1.1.5 Does participation in the GBP and FP influence completion rates?

8.1.1.6 How does students' performance during the final matric examination compare to their performance during the GBP pre- and post-tests respectively?

The reason for the last question was, if there is no difference in students' performance during each of the three assessment events, their matric results instead of their performance during the GBP could be considered for channelling purposes.

To answer these questions the following hypotheses were formulated.

8.1.2 The hypotheses

To facilitate matching each research question with the hypothesis stated to investigate the problem, the same order as that of the research questions in 8.1.1, is adopted to describe the hypotheses.

8.1.2.1 The first hypothesis refers to the GBP students' performance during their study years and possible patterns in the fluctuation in their performance. The stated hypothesis is that *there is no fixed pattern in the fluctuation in GBP students' performance at different year levels*.

8.1.2.2 The second hypothesis refers to the retention of students who participated in the GBP and/or FP in comparison to the retention of their mainstream peers. The stated hypothesis is that *there is no difference in the retention rate of GBP and MS students.*

8.1.2.3 The third hypothesis refers to the performance of students who participated in the GBP (both GBP-FP and GBP-MS) in comparison to the performance of their mainstream peers during the various study years. The stated hypothesis is that *there is no difference between GBP and MS students' aggregate year marks in different faculties during various historic study years.*

8.1.2.4 The fourth hypothesis relates to possible differences in the influence of the FP on student performance in different faculties. The hypothesis is that *there is no difference in the aggregate year marks of GBP-FP students in different faculties compared to those of their mainstream peers.*

8.1.2.5 The fifth hypothesis refers to the influence of the GBP and FP on students' transition from the first to the second academic year. The hypothesis is that *there is no difference between GBP-FP students and MS students regarding their performance during the second academic year, as measured by a comparison between the two groups of students' aggregate year marks at the end of the first and the second academic years respectively.*

8.1.2.6 The sixth hypothesis refers to the influence of the GBP and FP on completion rates. The stated hypothesis is that *there is no difference between the MS group and the GBP-FP group regarding the percentage of students who graduate within the minimum required time*.

8.1.2.7 The last hypothesis deals with the comparison between the GBP students' matric results and their performance related to the GBP. The hypothesis is that *there is no difference between the students' matric results and their GBP pre- and post-test results*.

How the quantitative data was analysed will be explained with the reporting of the results that were used to verify each of the statements. In the following section the criteria for the data selection will be explained. The various data sources from which the relevant data was retrieved were discussed with the description of the research process (see 6.5.3).

8.2 The data selection

Because of the need to compare the students' performance at various points in time during the analysis of the data, those students whose full academic record could not be obtained were left out of the quantitative analysis.

8.2.1 Criteria for inclusion in the GBP groups

To be included in the study as a subject in the GBP group, students had to meet three criteria. Firstly, they had to have been on the four week Gencor Bridging Programme at the beginning of one of the years from 1995 till 1997. Secondly, they must either have graduated already, or must be enrolled in one of the faculties relevant to this study and, thirdly, full records of the students' GBP and academic performance during their study years had to be available.

The various sets of data that were needed for the GBP students were the average of the final matric results, the GBP pre- and post-test average of Mathematics, English and Afrikaans, and the results of the students' academic performance in each study year, as far as they have progressed. In other words, for the 1995 GBP group three sets of performance results were obtained from their student records, unless the student dropped out of the system before the end of year three. For the 1996 and 1997 GBP groups, either two or only one set of performance results could be obtained, respectively.

Whether a student had failed or passed was not taken into account as long as the particular student continued to be enrolled in one of the four faculty groupings investigated in this study. This implies that if a student changed to another course outside these four faculty groupings, for example to BA, this student would be left out, even if the student's initial enrolment was in a relevant faculty.

The criteria for inclusion in the mainstream group differed from those for the GBP group.

8.2.2 Criteria for inclusion in the mainstream groups

To be included as a subject in the mainstream group, there were five criteria that students had to meet: They should have matriculated at one of the schools from which the GBP students were selected, the year of their first enrolment must have been between 1995 and 1997, this enrolment must have been in one of the faculties belonging to the four faculty groupings investigated in this study, they must be enrolled for the ordinary mainstream course and not for an extended course, and must not have participated in the GBP or FP. In addition, a full study record of the student had to be obtainable.

The sets of data that were needed for mainstream students were their results in the final matriculation examination, and their aggregate year marks for every year they have continued with their studies. As for the GBP students, whether they had passed or failed was not taken into account, as long as they had not dropped out of the system, and were still enrolled in a course presented at a faculty within the four faculty groupings or had graduated.

The data collection process was explained graphically in figure 6.1. Where necessary the processing of the data will be described together with the analysis as an introduction to the reporting of the particular results. The first set of data that was used was the matric results of all the students included in the study, that is both GBP and mainstream students.

8.3 Classification according to matric results

As was explained earlier (see 6.5.1), the students were classified according to their matric results in four categories, namely *top, high, medium and low*. Because the need arose for differentiation within the low category, a fifth category was created. This upper margin for the additional, *very low* category, was the same as the criterion for passing a subject at the University, namely 50%. These five categories were used for the categorisation of all scores in the further analysis. The upper and lower margins for the five categories are as follows:

- Top: 75% +
- High: 65% - 74.9%
- Medium: 55% - 64.9%
- Low 50% - 54.9%
- Very low Less than 50%

There was no lower margin set for the very low category. The only criterion was that the student must not have dropped out of the system.

The purpose of the classification of students according to their matric results was to give an indication of the quality of students at the entry level, should matric results be a reliable measure. The reporting of the results according to enrolment in the four faculty groupings makes it possible to illustrate the spread across the categories in each faculty. The results of the classification of all the students, that is the three year groups across the faculty groupings, are presented in Tables 8.1 to 8.3.

The abbreviations used in table 8.1 are used in all further tables and figures. These are:

Nat: Faculties of Natural Sciences, Agricultural Sciences and Forestry

E&M: Faculty of Economic and Management Sciences

M&D: Faculties of Medicine and Dentistry

Eng: Faculty of Engineering

GBP: Students who participated in the Gencor Bridging Programme

Main: Mainstream students who were included in this study.

During the further discussion of the classification according to matric results the three year groups represented in tables 8.1 to 8.3 are treated simultaneously, to allow a comparison between groups and to avoid duplication in the discussion of the results. The three tables are also presented together to facilitate comparison across faculties and across year groups.

There are no results reported for the Medicine and Dentistry groups in table 8.1. The reason is that no M&D students participated in the Gencor Bridging Programme at the beginning of 1995. Therefore no mainstream group in this cluster was selected either.

Table 8.1: Categories of matric results of 1995 GBP and mainstream students

	Nat		E&M		M&D		Eng	
Category	**GBP**	**Main**	**GBP**	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	1	9	2	7	n/a	n/a	4	5
High	17	27	6	22	n/a	n/a	2	7
Medium	19	27	22	18	n/a	n/a	1	1
Low	3	4	4	1	n/a	n/a	-	1
Very low	1	3	2	3	n/a	n/a	-	-
Total	41	70	36	51	n/a	n/a	7	14

Table 8.2: Categories of matric results of 1996 GBP and mainstream students

	Nat		E&M		M&D		Eng	
Category	**GBP**	**Main**	**GBP**	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	-	9	-	18	2	17	5	6
High	8	16	5	19	4	12	5	3
Medium	21	14	11	6	1	7	3	1
Low	3	-	7	3	-	-	-	-
Very low	2	-	2	-	-	-	-	-
Total	34	39	25	46	7	36	13	10

Table 8.3: Categories of matric results of 1997 GBP and mainstream students

	Nat		E&M		M&D		Eng	
Category	**GBP**	**Main**	**GBP**	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	1	17	1	25	5	17	2	4
High	9	25	4	19	5	9	4	1
Medium	11	17	7	7	5	7	4	1
Low	1	1	-	2	1	1	-	-
Very low	1	-	-	1	-	2	-	-
Total	23	60	12	54	16	36	10	6

In all the year groups the Engineering group is always the smallest, followed most often by the M&D group, while the majority of students are enrolled in the first and second faculty groupings (Nat and E&M). The GBP students who enrolled during 1995 to 1997 in these two faculties are mainly classified in the medium category. There are however, more mainstream than GBP students in the high category for all the year groups of these two faculty groupings (Nat and E&M). The first year intake in the third and fourth faculty groupings (M&D and Eng) are mainly from the top and high category, that is, students with a matric average of 65% plus. The exceptions in

the very low category in the 1997 M&D mainstream group, were both nursing students. All students in the very low category gained special access to the University, subject to conditions approved by the senate.

The results presented in tables 8.1 to 8.3 can be summarised as follows:

- the matric results of most of the GBP students enrolled in the first two faculty groupings (Nat and E&M) were in the medium category; while the majority of mainstream students were in the high category;
- there were almost as many mainstream students enrolled in the E&M group in the top category as in the high category;
- the matric results of the majority of students, both GBP and mainstream, enrolled in the third and fourth faculty groupings (M&D and Eng), were in the top and high category.

The initial classification of the students into five categories according to their matric results makes it possible to compare their performance in the final school examination with their performance in higher education. The following section deals with their progress through the various study years.

8.4 Classification according to progress through study years

The aggregate year marks obtained by the students at the end of each study year were again classified into the top to very low categories, to establish changes in the numbers within each category. To illustrate the progress of each individual through his/her study years would have been too confusing, therefore only the number of students in each category is indicated, accompanied by an explanation of the nature of the change in each category. Tables 8.4 - 8.9 illustrate the classification of the 1995 GBP and mainstream groups in each of the faculties.

The general trend across faculties of students in the GBP group is that, with the exception of one student enrolled in the Engineering faculty, there were no students left in the top and high categories by the end of year 1. Amongst the mainstream students there was a sharp decline in the top two categories, with a total of only two students left in the top and three in the high category by the end of year 1, across

faculties. Furthermore the very low category, which contained only a few students according to their matric results, became the largest category after year 1, in all the 1995 groups.

The general trend by the end of year 2 is that a few GBP students had moved into the top and high categories, while the total number of mainstream students in these two categories increased from three to ten. With the exception of the GBP Engineering group, the very low category remained the largest.

By the end of year 3, none of the groups had students in the top category. The medium category of the GBP groups showed a slight increase, while the position regarding the mainstream students was too varied in the different faculties to identify a trend across faculties. The very low category was still the largest in all the groups across faculties.

A brief discussion of the progress within each of the 1995 groups will follow the presentation of the table in which the results of that group is reported. In order to illustrate the variety of movement between the categories in all the year groups, table 8.4 and 8.5 will be explained in detail. The rest of the tables will be discussed briefly, unless there is an important change in one of the groups discussed in table 8.6 to 8.9.

Table 8.4: Classification of 1995 GBP students in the Natural Sciences, during three historic study years

	Matric	**Year 1**	**Year 2**	**Year 3**
Top	1	-	-	-
High	17	-	1	1
Medium	19	14	4	5
Low	3	11	6	5
Very low	1	16	18	12
Total	41	41	29	23

The performance of the top matric student in the group represented in table 8.4, dropped to a low borderline year mark of 50.1% by the end of year 1, dropped further to very low (39.7%) by the end of year 2, and recovered to medium (57.4%) by the end of year 3.

Of the 17 GBP students in the high category as indicated in table 8.4, six moved into

the very low category, and four of these students had dropped out of the system by the end of year 1. Two of these 17 students completed the B Sc degree in three years and are at present enrolled for post-graduate studies. None of the students who were initially in the high category recovered sufficiently to move back into this category. The student in the high category by the end of year 2, as reported in table 8.4, moved up from the medium group during year 2, and dropped out of the system at the end of the same year. The student who, according to table 8.4, is in the high category by the end of year 3, moved from medium through very low in year 2, to high in year 3.

Of the 19 GBP students who started off in the medium category as illustrated in table 8.4, six remained in that category till the end of year 1. Only one of these six students remained in the medium category throughout year 2 and year 3. Five of the six dropped to very low after year 1 and after that they went a variety of routes. One of the five students is the person who moved up into the high category, as mentioned before, and one student dropped out after year 1. The other three students all remained in the very low category, but for different lengths of time. One of them dropped out after year 2, one dropped out after year 3, and one is still in the system. A total of 11 of the 19 students who started off in the medium category had dropped out of the system by the end of year 3.

The three GBP students in the low matric category in table 8.4, all ended very low in year one. Afterwards one dropped out, one stayed very low and one recovered to the low category by the end of year 3.

The one student in the very low category stayed very low till the end of year 1, and then dropped out.

In total only three students recovered to a higher category again during year 2, after the initial drop from matric to year 1, and five students increased their year mark between year 2 and year 3. As can be seen from the above discussion of table 8.4, there is no pattern in the performance of the students in relation to their matric results.

The differences in the performance of the 1995 mainstream students will be discussed next. Their overall performance profile is illustrated in table 8.5.

Table 8.5: Classification of 1995 mainstream students in the Natural Sciences during three historic study years

	Matric	Year 1	Year 2	Year 3
Top	9	2	1	-
High	27	-	5	3
Medium	27	5	7	11
Low	4	10	12	6
Very low	3	50	10	12
Total	70	67	35	32

The most obvious feature of the results reported in table 8.5 is the large increase in the very low category. Two of the three students who started off in this category remained there till the end of year 1 and then dropped out. The other student in the very low category dropped out during the first year. That implies that of the total of 67 students who were not in this category initially, 48 (72%) had dropped into this very low category by the end of year 1 - which means that they obtained a year mark below 50%. Of these students 32 did not register again the following year.

Of the nine students who started off in the top category, one remained there till the end of year 2 and then dropped out of the system. The other student who was in the top category by the end of year 1, as indicated in table 8.5, moved up from the high category and then dropped out of the system in the following year.

The four students in the 1995 mainstream group who completed their degrees within three years, started off in different categories, namely one in the top, two in the high and one in the medium category.

Amongst the students who were initially in the top and high categories, and whose performance declined to the medium, low or even very low categories by the end of year 1, there were nine who dropped out of the system after year 1. Most of the remaining students recovered, not necessarily to their initial categories, but their performance improved sufficiently to take them out of the very low category. Nobody reached the top category again, but five students had moved into the high and five into the medium category by the end of year 2. This was different from the GBP students who, with the exception of a few students who managed to move to a higher category again after year 1, showed a steady decline in the year 2 and year 3 performance of the

total group.

If one compares the decline in student numbers of the GBP and mainstream groups in tables 8.4 and 8.5 over the years, there is also a difference. In the GBP group the drop-out percentage between year 1 and year 2 was 29%, while there was a drop-out of 48% from the mainstream group. But between year 2 and year 3 the situation was reversed. Only a further 4% dropped out of the mainstream group, so that 48% of the mainstream students who enrolled initially in this faculty grouping in 1995 were still in the system by the end of 1997. The GBP students still in the system by the end of 1997 represented 56% of the initial enrolment in 1995, but the drop-out between year 2 and year 3 was 15%, compared to the 4% from the mainstream group. The total drop-out rates will be discussed in more detail later (see 8.5).

Whether the performance profiles of the 1995 GBP and mainstream students differed in other faculties will be seen during the following discussion of tables 8.6 and 8.7.

Table 8.6: Classification of 1995 GBP students in the Economic and Management Sciences during three historic study years

	Matric	Year 1	Year 2	Year 3
Top	2	-	1	-
High	6	-	-	-
Medium	22	2	3	3
Low	4	2	5	4
Very low	2	27	10	10
Total	36	31	19	17

As can be seen in table 8.6 the performance of almost all the GBP students in this faculty had dropped to very low by the end of year 1. One of the two students in each of the medium and low categories by the end of year 1, was already in the particular category according to the matric classification. The other student in each category moved down, one from top to medium, and the other one from medium to low. The student in the top category by the end of year 2, went from an initial medium classification to the two extremes - first very low and thereafter to the top - and then returned to the medium category by the end of year 3.

The overall pattern of the 1995 GBP students' performance in this faculty is one of

sharp decline between matric and the end of year 1, a high drop-out rate (48%) after year 1, a slight improvement in performance during year 2 and then more or less stabilisation during year 3. Two of the students in this group had completed a three year degree course by the end of 1997, and obtained a qualification. According to their matric results, the one was in the top and the other in the medium category.

The 1995 mainstream students apparently performed better than the GBP students in the faculty. Their results are reported in table 8.7.

Table 8.7: Classification of 1995 mainstream students in the Economic and Management Sciences during three historic study years

	Matric	Year 1	Year 2	Year 3
Top	7	-	1	-
High	22	1	2	4
Medium	18	4	5	4
Low	1	8	7	8
Very low	3	38	20	14
Total	51	51	35	30

Amongst the 1995 mainstream students there were five students who had completed a three year degree course by the end of 1997. They were all initially in either the top or the high category.

The overall pattern was very similar to that of the GBP students in this faculty, namely a sharp decline between matric and year 1, a slight improvement during year 2 and stabilisation during year 3. The drop-out percentage of the mainstream students was lower than that of the GBP students. The difference in drop-out rate was largest between year 1 and year 2. By the end of year 2, 32% of the mainstream students had dropped out, compared to the 48% GBP students, as mentioned above. By the end of 1997 more students from the mainstream group (58.8%) were still enrolled in the faculty, compared to the 47.2% from the GBP group.

The last of the 1995 year groups to be discussed, are the two groups enrolled in the Faculty of Engineering. Their results are reported in tables 8.8 and 8.9.

Table 8.8: Classification of 1995 GBP students in Engineering during three historic study years

	Matric	Year 1	Year 2	Year 3
Top	4	-	-	-
High	2	1	-	-
Medium	1	2	1	2
Low	-	1	4	-
Very low	-	3	-	2
Total	7	7	5	4

Table 8.9: Classification of 1995 mainstream students in Engineering during three historic study years

	Matric	Year 1	Year 2	Year 3
Top	5	-	-	-
High	7	-	1	-
Medium	1	1	2	1
Low	1	3	2	1
Very low	-	10	4	2
Total	14	14	9	4

In this faculty the performance of the GBP students showed a steady decline, while their mainstream peers' performance dropped between year 1 and year 2, then slightly improved during year 2, just to drop again during year 3. Fourteen mainstream students enrolled in 1995 compared to the seven GBP students. Most of them were high or top performers according to their matric classification. One student from the medium category was included in each group, and one low performer in the mainstream group.

The GBP student in the medium category stayed in this category and was still enrolled by the end of 1997. The performance of the mainstream student in the medium category had dropped to very low by the end of year 1, and he did not enroll again the next year. The student in the low category also dropped to very low in year 1, stayed there in year 2, and then left the University.

Apparently the 1995 GBP students performed proportionally better than their peers in this faculty, because four of the seven GBP students were still enrolled by the end of 1997, compared to four of the fourteen mainstream students.

This concludes the discussion of the 1995 year groups. The performance of the 1996 GBP and mainstream groups will be discussed next, starting with the students enrolled in the first faculty grouping. The progress of the GBP and mainstream students are reported together in table 8.10.

Table 8.10: Classification of 1996 GBP and mainstream students in the Natural Sciences during two historic study years

	Matric		Year 1		Year 2	
	GBP	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	-	9	-	-	-	-
High	8	16	2	1	-	1
Medium	21	14	4	6	2	9
Low	3	-	8	3	4	6
Very low	2	-	19	29	18	13
Total	34	39	33	39	24	29

What was noticeable about the performance of this GBP group is that only one student in the whole group managed to recover again to a higher category after an initial drop during year 1. The performance of most of the students in the GBP group either dropped during year 1 and then stayed low or very low, or there was a gradual decline in performance. Two students managed to stay in the high category during year 1, but then dropped to medium and very low respectively during year 2. The one student in the initial medium category who managed to remain in that category till the end of year 1, also dropped to very low during year 2. Of the initial 34 GBP students, 30% dropped out of the system after year 1.

As can be seen in table 8.10, the mainstream group started off with 25 students in the top or high category, and no students in the two lowest categories. By the end of year 1, 74% of the students had dropped into the very low category. Some of these students managed to move up one or two categories during year 2, while 26% of the initial 39 mainstream students who enrolled at the beginning of 1996, did not register again the following year.

The progress of the two groups in the Faculty of Economic and Management Sciences will be discussed next. Their results are reported together in table 8.11.

The mainstream group enrolled in this faculty was not only larger than the GBP group,

but also seemed to be academically a better group. As can be seen in table 8.11, the GBP group showed a sharp decline in performance between their matric results and their year mark at the end of year 1. Only nine students of this group (36%) were still enrolled by the end of 1997, and they were all in the very low performance category.

Table 8.11: Classification of 1996 GBP and mainstream students in the Economic and Management Sciences during two historic study years

	Matric		Year 1		Year 2	
	GBP	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	-	18	-	-	-	-
High	5	19	-	4	-	1
Medium	11	6	1	7	-	8
Low	7	3	3	9	-	11
Very low	2	-	21	25	9	7
Total	25	46	25	45	9	27

The performance of the mainstream group also dropped sharply during year 1, but improved slightly during year 2. One student managed to recover during year 2 to her initial high classification. By the end of year 2, 58.7% of the mainstream students who enrolled in this faculty in 1996, were still in the system.

During 1996 students from the Faculties of Medicine and Dentistry were included for the first time in the GBP activities. Their progress is illustrated by the figures in table 8.12.

Table 8.12: Classification of 1996 GBP and mainstream students in Medicine and Dentistry during two historic study years

	Matric		Year 1		Year 2	
	GBP	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	2	17	-	-	-	1
High	4	12	-	3	1	7
Medium	1	7	3	15	1	8
Low	-	-	3	9	2	8
Very low	-	-	1	8	2	9
Total	7	36	7	35	6	33

No students from either the GBP or mainstream groups in the two lowest categories were enrolled in this faculty grouping. Only seven students participated in the GBP, compared to the 36 mainstream students. The performance of the GBP students

showed a decline during year 1, and a slight improvement during year 2. By the end of year 2 six of the initial seven students were still enrolled in the faculty.

In the mainstream group two students in the high category and two students in the medium category managed to maintain their matric classification throughout the two study years. Only three students in the top and two students in the high category had dropped down to the very low category by the end of year 1. There is no specific pattern in the further performance of the students after the decline during year 1.

During year 2 some students maintained the standard of performance demonstrated by the end of year 1, others improved their performance, while the rest showed a steady decline. Only three students of this group had dropped out by the end of year 2.

The last two groups of the 1996 year group to be discussed, are the students enrolled in the Faculty of Engineering. Their progress is indicated in table 8.13

Table 8.13: Classification of 1996 GBP and mainstream students in Engineering during two historic study years

	Matric		Year 1		Year 2	
	GBP	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	5	6	-	-	-	-
High	5	3	-	-	1	-
Medium	3	1	4	2	2	2
Low	-	-	5	-	2	4
Very low	-	-	4	7	5	2
Total	13	10	13	9	10	8

Neither of the two groups enrolled in this faculty, had students in the two lowest categories. There were only a small number of students in both groups, namely thirteen GBP students, and ten mainstream students. The performance of all the students in both groups declined during year 1 from the three top to the three bottom performance categories. All the mainstream students in the top and high categories had dropped into the very low category by the end of year 1, except one student who dropped from high to medium. With the exception of three students, all these students improved their performance again during year 2, and moved up at least one category. The performance of the GBP group also deteriorated during year 1, and all these students also moved from the three top categories into the three lowest categories.

There were two main differences between the performance of the two groups, Firstly, the decline in the performance of the GBP students during year 1 was less than that of the mainstream students, and secondly, the GBP students did not manage to improve their performance again during year 2.

The progress of the 1997 year group will be discussed next. The results of the GBP and mainstream students are reported together in two of the four faculty groupings at a time. Table 8.14 illustrates the progress of the students in groups 1 and 2 of the four faculty groupings.

Table 8.14: Classification of 1997 GBP and mainstream students in the Natural and Economic and Management Sciences during one historic study year

	Matric Nat		Year 1 Nat		Matric E&M		Year 1 E&M	
	GBP	**Main**	**GBP**	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	1	17	-	1	1	25	-	-
High	9	25	1	3	4	19	-	3
Medium	11	17	1	5	7	7	2	9
Low	1	1	4	6	-	2	3	7
Very low	1	-	17	43	-	1	7	34
Total	23	60	23	58	12	54	12	53

As can be seen in table 8.14 the number of mainstream students enrolled in the Natural Sciences faculty grouping was more than double that of GBP students. The performance of both groups dropped sharply during year 1. Of the 23 students in the GBP group, 74% dropped into the very low category while 71% of the 60 mainstream students ended up in the very low performance category. Only one GBP student managed to improve, and moved from the medium to the high category. Among the mainstream students two candidates managed to remain in the top and high categories respectively, and two top performers moved down to the high category during year 1. All the others showed a sharp decline in performance.

The other two groups referred to in table 8.14 were enrolled in the Faculty of Economic and Management Sciences. Only 12 students participated in the GBP, while 54 students enrolled directly into the mainstream. The GBP students all started off in one of the top three categories, while the majority of the mainstream students were also initially in these categories, but there were also three students in the two lowest

categories. None of these three students enrolled again at the beginning of the following year. In the mainstream group only three students moved down from the top to the high category, all the others showed a sharp decline in performance. All the students in the GBP group moved down at least two categories, except one medium student who moved down to the low category. The percentages of students in both groups who were in the very low category by the end of 1997, was 58.3% of the GBP students and 62% of the mainstream students.

The performance of the 1997 students enrolled in the third and fourth faculty groupings will be discussed next. Their progress is illustrated by the figures in table 8.15.

Table 8.15: Classification of 1997 GBP and mainstream students in Medicine, Dentistry and Engineering during one historic study year

	Matric		**Year 1**		**Matric**		**Year 1**	
	M&D		**M&D**		**Eng**		**Eng**	
	GBP	**Main**	**GBP**	**Main**	**GBP**	**Main**	**GBP**	**Main**
Top	5	17	-	1	2	4	-	-
High	5	9	-	2	4	1	1	-
Medium	5	7	2	11	4	1	1	1
Low	1	1	3	9	-	-	4	1
Very low	-	2	11	13	-	-	4	4
Total	16	36	17	36	10	6	10	6

As indicated in table 8.15 the number of mainstream students enrolled in the Faculties of Medicine and Dentistry was more than double that of the GBP students. In the mainstream group two students, one in the top and one in the high category managed to maintain their initial standard of performance. The rest of the students in this group all showed a decline in performance by the end of year 1. The distribution across the categories was, however, better in this group than in all the other groups of the 1997 year group. Only seven of the 26 students who started off in the top and high categories dropped down into the very low category. The GBP group did not do as well. Nobody in this group managed to maintain his/her standard, and the two students in the medium category, as indicated in table 8.15, had initially been in the top category.

The other groups represented in table 8.15 are the 1997 GBP and mainstream groups

enrolled in the Faculty of Engineering. The progress of ten GBP and six mainstream students is reported here. The overall performance of the GBP group was better than that of the mainstream group. Although there were four students of each group in the very low category by the end of year 1, only one GBP student dropped from one of the two top categories to the very low category. There was also one student in this group who managed to remain in the high category. Amongst the mainstream group, the smallest decline in performance was a drop of two categories from the top to the medium category. All the other students dropped into the very low category, except one student who started off high and moved down to the low category.

If the overall performance of the GBP and mainstream students in the three year groups in all the faculties is compared, there are no fixed patterns. Students' performance fluctuates at random. At this stage of the data analysis, where only frequencies have been taken into account, the provisional answers to the first research question stated in 8.1.1.1 is as follows:

- The students' matric performance is better than their performance in later years, and the biggest decline in performance occurs during year 1. There are also indications of some recovery in the performance of the mainstream group during year 2, but not a complete recovery to the level of the students' performance as indicated by their matric results.
- There is no fixed pattern in the fluctuation in students' performance at different year levels in any of the faculty groupings.

In the following section the total drop-out rates of the 1995 - 1997 GBP (GBP-FP and GBP-MS) and mainstream groups in the various faculties will be discussed.

8.5 Drop-out rates of GBP and mainstream students

The total drop-out rates of the GBP and mainstream groups will be discussed together, to enable comparisons between the groups across years, as well as across faculties. The results of the 1995 - 1997 GBP and mainstream groups, are presented in tables 8.16 and 8.17 respectively. The apparent discrepancies with tables 8.4 to 8.15 are due to the fact that the drop-out figures are based on the enrolment figures for

1998.

Table 8.16: Total drop-out per faculty grouping for 1995-1997 GBP groups

Year group	Nat			E&M			M&D			Eng		
	N	Out	% Out	N	Out	% Out	N	Out	% Out	N	Out	% Out
1995	41	22	53.7	36	13	36.1	n/a	n/a	n/a	7	4	57.1
1996	34	20	58.8	25	19	76	7	2	28.6	13	5	38.5
1997	23	15	65.2	12	5	41.7	16	7	43.7	10	4	40

N: *total number enrolled for year 1*
Out: *total number out by the beginning of 1998*

Table 8.17: Total drop-out per faculty grouping for 1995-1997 mainstream groups

Year group	Nat			E&M			M&D			Eng		
	N	Out	% Out	N	Out	% Out	N	Out	% Out	N	Out	% Out
1995	70	39	55.7	51	25	49	n/a	n/a	n/a	14	10	71.4
1996	39	12	30.8.	46	9	19.6	36	2	5.6	10	3	30
1997	60	20	33.3	54	12	22.2	36	3	8.3	6	2	33.3

N: *total number enrolled for year 1*
Out: *total number out by the beginning of 1998*

It is important to remember that the total drop-out rates of the three year groups as reported in tables 8.16 and 8.17 were measured over different lengths of time. The figures of the 1995 year group represent three study years, while the figures for the 1996 and 1997 year groups represent two and one study year(s) respectively. The totals in table 8.4 through to 8.13 show how many students in the 1995 and 1996 year groups, both GBP and mainstream, were still in the system by the end of each historical study year in each faculty. The drop-out figures in tables 8.16 and 8.17 include those students who dropped out after the end of 1997 and thus did not enroll for a course at the beginning of 1998.

The two highest total drop-out rates were reported in the Faculty of Economic and

Management Sciences for the 1996 GBP group (76%) and in the Faculty of Engineering for the 1995 mainstream group (71.4%). These were high figures in comparison with the rest of the figures indicated in tables 8.16 and 8.17. Although the lowest drop out rates, which were both found in the Faculties of Medicine and Dentistry mainstream groups, namely in 1997 (8.3%) and 1996 (5.6%), were measured over one and two years respectively, they can probably be considered a fairly true representation of the situation, because the highest drop-out in all groups across faculties occurred between year 1 and year 2, as can be deducted from tables 8.4 - 8.14.

In the first faculty grouping (Nat) the drop-out rate for the GBP students was higher than those in the main stream in two of the three year groups. In the second faculty grouping (E&M) there was no fixed pattern. Amongst the students in the two 1995 groups the drop-out rate in the mainstream group was higher. In the following year the situation was reversed to the extreme. The drop-out amongst the 1996 GBP students was more than three times as high as that of their mainstream peers. In 1997 the drop-out in the GBP group was almost twice as high as in the mainstream group. In the third faculty grouping (M&D) there was a big difference in the drop-out rate of the two groups, with the GBP groups about three times as high as that of the mainstream groups in both 1996 and 1997. In the fourth faculty grouping the drop-out rate was higher amongst the students in the mainstream groups than in the GBP groups during 1995 and 1996 and lower in 1997.

In summary it can be said that there is no fixed pattern in the drop-out rates of the three year groups across faculties. The only conclusion that can be drawn from the available data is that the total drop-out percentages in the Faculties of Medicine and Dentistry mainstream groups are considerably lower than in the other faculties.

In the final section of the frequency analysis the influence of the GBP and FP together is investigated. For this purpose the GBP students are split into two groups according to the route they followed after the four-week GBP.

8.6 Influence of GBP and FP on transition and completion rates

During this phase of the investigation the focus is on transition and completion rates. In this section the results of the GBP-FP students, that is those students who participated in both the GBP and FP are investigated separately. The results of students who went into the mainstream after the four-week GBP (GBP-MS) are considered only for the 1995 year group, because relatively few 1996 and almost no 1997 GBP students went into the mainstream. The MS students are mainstream students who were not exposed to either GBP or FP activities. All comparisons in this section are based on students' performance during comparable *academic* years. The initial distribution of students across programmes in all four faculty groupings is presented in table 8.18.

Table 8.18: Distribution of students across faculties and programmes

	1995				1996				1997			
	G	GF	GM	M	G	GF	GM	M	G	GF	GM	M
Nat	41	25	16	70	34	23	11	39	23	23	0	60
E&M	36	11	20	51	25	18	6	46	12	8	4	54
M&D	n/a	n/a	n/a	n/a	7	6	1	36	16	16	0	36
Eng	7	6	1	14	13	11	1	10	10	10	0	6

G = GBP; GF = GBP-FP; GM = GBP-MS; M = MS

The discrepancy in numbers between GBP students and the total of GBP-FP plus GBP-MS students is due to the fact that some of the GBP students either left the University or studied in another faculty which is not part of the faculty groupings under investigation. As indicated in table 8.18 the total number of students who went into the mainstream after the GBP declined from 44% in 1995 to 6.5% in 1997. Some students are advised to follow the FP route while others are compelled to do so.

8.6.1 Comparison of GBP-FP, GBP-MS and MS students

The focus of this discussion is the success of students' transition between specific academic years. The aim is to establish how the GBP-FP students' performance during an academic year with a full mainstream workload and without support modules compares with the performance of their peers. The extended curriculum implies that GBP-FP students' first academic year ends after their second historic year, except for

students in the Faculty of Engineering. In this faculty the first two academic years are extended over three years. During the second *academic* year the GBP-FP and MS students in the first three faculty groupings (Nat, E&M and M&D) are following the full mainstream programmes. All students in the Faculty Engineering follow the full mainstream programme by their third academic year. Considering the influence of adaptation to the higher education environment on students' performance during the first year of study a true comparison between all the different groups of students can only be made during the third academic year. Due to the limited available data this comparison can only be made with students belonging to the 1995 year group.

The transition results from the first to the second and from the second to the third academic year (when possible) of GBP-FP, GBP-MS and MS students' in all faculty groupings were compared. The aggregate year marks of Nat, E&M and M&D students' at the end of the first and second academic years, and Eng students' second and third academic years were divided into performance categories. The results of the relevant comparisons for the Nat and E&M students regarding transition are illustrated in tables 8.19 to 8.24, and for M&D and Eng students in table 8.25.

Table 8.19: Comparison of transition results of 1995 year group - Nat

	GBP-FP			GBP-MS			MS		
	1st	**2nd**	**3rd**	**1st**	**2nd**	**3rd**	**1st**	**2nd**	**3rd**
Top	-	-	-	-	-	-	2	1	-
High	1	1	-	-	-	-	-	5	3
Medium	2	2	2	3	2	4	5	7	11
Low	4	3	3	6	2	1	10	12	6
Very low	10	7	6	7	8	5	50	10	12
Total	17	14	11	16	12	10	67	35	32
%	68	56	44	87.5	75	62.5	95.7	50	45.7

% is based on initial number of students participating in a specific programme (see table 8.18)

To compare the transition patterns the differences between the students' results at the end of the first and second and the second and third academic years respectively were considered. As indicated in table 8.19 the transition of the GBP-FP Nat group seems to be relatively smooth, with apparently few changes in the figures in the various performance categories and only 12% difference in the number of students enrolled at the end of each year. This apparent steady decline in the total performance of the

group does not reflect the performance profiles of individual students in this group. The performance profiles of individual students in the GBP-FP group who were still in the system by the third academic year are illustrated in the shaded section of table 8.20. Each row represents one student's performance categories for matric and the first to third *academic* years.

Although there is apparently more fluctuation in students' performance in the 1995 GBP-MS Nat group, as indicated in table 8.19, there is also a relatively small difference (12.5%) in student numbers between both the first and second and the second and third academic years. The performance profiles of individual students in the GBP-MS group are illustrated in the unshaded section of table 8.20.

Table 8.20: Transition profiles of GBP individuals in the 1995 year group - Nat

GBP-FP				GBP-MS			
Matric	**1st**	**2nd**	**3rd**	**Matric**	**1st**	**2nd**	**3rd**
H	M	L	L	T	L	VL	M
H	VL	L	VL	H	M	L	VL
H	VL	VL	VL	H	L	M	M
M	H	M	M	H	L	VL	M
M	M	L	L	H	L	L	VL
M	L	L	L	H	L	VL	L
M	L	L	L	H	VL	VL	VL
M	L	VL	VL	M	M	M	M
M	L	VL	VL	M	L	VL	VL
M	VL	H	M	-	-	-	-
M	VL	M	VL	-	-	-	-
L	L	L	L	-	-	-	-

H = High; M = Medium; L = Low; VL = Very low

As can be seen in table 8.20, there is no fixed pattern in the fluctuation in performance of individual students in any of the two GBP groups. Based on these performance profiles there is no evidence of a definite improvement in GBP-FP students' performance that can be attributed to the positive influence of the GBP and the FP together in the Nat faculty grouping of the 1995 year group.

The difference in student numbers between the first and second academic year in the MS group (45.7%) is much bigger than that of the two GBP groups (see table 8.19), which might be an indication of the positive influence of the channelling function of the

GBP on Nat students' transition between academic years, but it might also be a coincidence. This positive influence of the GBP is not verified by the transition results of the 1996 Nat GBP students (see table 8.22) and due to the limited available data no verification with another year group was possible.

The results of a comparison of the performance of the GBP-FP, GBP-MS and MS students in the 1995 E&M year group are illustrated in table 8.21.

Table 8.21: Comparison of transition results of 1995 year group - E&M

	GBP-FP			GBP-MS			MS		
	1st	**2nd**	**3rd**	**1st**	**2nd**	**3rd**	**1st**	**2nd**	**3rd**
Top	1	-	-	-	-	-	-	1	-
High	-	-	-	-	-	-	1	2	4
Medium	2	1	-	2	1	1	4	5	4
Low	1	1	2	1	3	2	8	7	8
Very low	-	1	1	17	10	9	38	20	14
Total	4	3	3	20	14	12	51	35	30
%	36.4	27.3	27.3	100	70	60	100	68.6	58.8

% is based on initial number of students participating in a specific programme (see table 8.18)

As indicated by the figures in table 8.21 it seems as if the performance of GBP-FP students who manage to stay in the system stabilises between the second and third academic years. This is however a very small number of students and no verification of this trend was possible with any other groups. The performance of the MS students seems to improve slightly after the first academic year but declines again during the third year. The performance of the GBP-MS students declines gradually form the first to the third academic year. Once again there is no fixed pattern in the performance profile of individual students. The profiles of E&M students in the two GBP groups are presented in table 8.22.

As indicated in table 8.22, none of the GBP students managed to improve their performance during the third year. The individual profiles of the MS students, although not illustrated in this table, were much better. Of the 30 students in this group 12 improved their performance during the third academic year, five stayed at the same level and 13 students' performance deteriorated after the second academic year. There was also no fixed pattern in the performance results of the MS group.

Table 8.22: Transition results of GBP individuals in the 1995 year group - E&M

GBP-FP				GBP-MS			
Matric	**1st**	**2nd**	**3rd**	**Matric**	**1st**	**2nd**	**3rd**
M	T	M	M	T	M	M	L
M	L	L	L	H	VL	VL	VL
M	M	VL	VL	H	VL	VL	VL
-	-	-	-	M	M	VL	VL
-	-	-	-	M	VL	L	VL
-	-	-	-	M	VL	L	VL
-	-	-	-	M	VL	VL	L
-	-	-	-	M	VL	VL	VL
-	-	-	-	M	VL	VL	VL
-	-	-	-	M	VL	VL	VL
-	-	-	-	L	VL	VL	M

T = Top; H = High; M = Medium; L = Low; VL = Very low

Only a small number of the 1996 GBP students went into the mainstream, namely Nat (10), E&M (6), M&D (1) and Eng (2). The results of these GBP-MS students are as follows: Of the ten Nat students six dropped out of the system, one during and two at the end of the first year and three at the end of the second year. The four students who were still in the system by the time of the investigation were all in the low or very low performance categories. All the E&M students except one (in the very low category) dropped out of the system during or at the end of the first year. The M&D student dropped out during the first year and the two Eng students were still in the system, one in the very low and the other in the low performance categories. Of the nineteen 1996 GBP-MS students only 7 were still at the University, all in the low or very low categories, therefore only the transition results of the 1996 GBP-FP and MS groups are compared in table 8.23.

The GBP-FP students in both the Nat and E&M groups seem to be affected negatively by the transition to the full mainstream curriculum. The figures in table 8.23 indicate that the performance results of the Nat GBP-FP group was better than that of the E&M group, but the MS students in both faculty groupings performed better during the second academic year than the GBP-FP groups.

Table 8.23: Comparison of transition results of 1996 year group - Nat and E&M

	GBP-FP		MS		GBP-FP		MS	
	Nat		Nat		E&M		E&M	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Top	-	-	-	-	-	-	-	-
High	-	1	1	1	-	-	4	1
Medium	2	2	6	9	-	-	7	8
Low	4	2	3	6	-	-	9	11
Very low	17	5	29	13	9	3	25	7
Total	23	10	39	29	9	3	45	27
%	100	43.5	100	74.4	50	16.7	97.8	58.7

% is based on initial number of students participating in a specific programme (see table 8.18)

The 1997 GBP-FP year group could only have completed their academic first year by the end of 1998. Therefore it was not possible to establish how the transition from a programme with support modules to the full mainstream curriculum affected them. There were no GBP-FP students in the M&D group during 1995, therefore only the results of the 1996 year group can be presented in table 8.24. In the Eng group only the 1995 GBP-FP students had completed their third year by the end of 1998, therefore only the results of the 1995 Eng groups are presented - also in table 8.24.

Table 8.24: Comparison of transition results of 1995 Eng and 1996 M&D year groups

	GBP-FP		MS		GBP-FP		MS	
	Eng 1995		Eng 1995		M&D 1996		M&D 1996	
	2nd	3rd	2nd	3rd	1st	2nd	1st	2nd
Top	-	-	-	-	-	-	-	1
High	-	-	1	-	1	-	3	7
Medium	2	-	2	1	1	1	15	8
Low	-	-	2	1	2	1	9	8
Very low	2	4	4	2	2	3	8	9
Total	4	4	9	4	6	5	35	33
%	66.7	66.7	64.3	28.6	100	83.3	97.2	91.7

% is based on initial number of students participating in a specific programme (see table 8.18)

As indicated in table 8.24, the performance of the GBP-FP Eng students are all still in the system after the transition to the full mainstream curriculum, but their performance has declined to the very low category. More than 50% of their MS peers have left by the end of the third academic year, but the performance results of the remaining MS

students are better than that of the GBP-FP students.

The comparison of 1996 M&D students' performance during the first and second academic years, as illustrated in table 8.24, indicates that the MS group performed better than the GBP-FP students. Both groups have to cope with the transition to a different campus, but the GBP-FP students have to adapt also to the full mainstream curriculum. During the qualitative investigation some M&D students commented on the difference in workload between the first and second academic year and complained that the FP did not prepare them for the second academic year (see 7.3.3).

In the following discussion the completion rates of some of the GBP and MS students in two faculty groupings (Nat & E&M) in the 1995 year group will be compared.

8.6.2 Comparison of completion rates

In this section only the results of MS and GBP-MS students who enrolled for a programme with a minimum duration of three years, and GBP-FP students enrolled for a an extended programme with a minimum duration of four years, are taken into account. In other words, all students whose performance is considered could have obtained a degree after either three or four years. Therefore students from only two of the four faculty groupings, namely Nat and E&M, in the 1995 year group form part of this investigation.

The results of three groups of students are compared, namely the GBP-FP, GBP-MS and MS groups. For all groups the subjects' performance results during the period 1995-1997 are used. To be able to compare students' results after three *academic* years, an additional set of scores, namely the 1998 aggregate year mark, had to be obtained and calculated for the GBP-FP group. The results are presented in tables 8.25 and 8.26. In both these tables the reason for the discrepancies between the number enrolled and the total in the other categories is that some students left the University after the GBP without registering for a programme.

As can be seen in tables 8.25 and 8.26, the highest percentage of students in both

faculty groupings who graduated within the minimum required time participated in the GBP. In the E&M group these students also took part in the FP and thus were exposed to the combined influence of both academic development initiatives. In the Nat group these students belonged to the GBP-MS group.

Table 8.25: Comparison of completion rates: 1995 - Nat

Nat						
	GBP-FP		GBP-MS		MS	
	N	%	N	%	N	%
Enrolled	18	100	10	100	55	100
Graduated	1	5.5	2	20	5	9.1
Changed	0	0	1	10	2	3.6
Dropped out	16	88.8	6	60	31	56.4

Table 8.26: Comparison of completion rates: 1995 - E&M

E&M						
	GBP-FP		GBP-MS		MS	
	N	%	N	%	N	%
Enrolled	9	100	18	100	50	100
Graduated	2	22.2	2	11.1	5	10
Changed	0	0	1	5.5	0	0
Dropped out	7	77.8	7	38.9	26	52

In both faculty groupings the highest number of graduates was found in the MS groups, but this was also in both cases the largest group. As stated before (see 8.1) the numbers are to small to draw any conclusions from these figures. However, it might be possible that the channelling function of the GBP has a positive influence on completion rates. This should be investigated further before any generalisations can be made.

In the first part of this chapter the results obtained from the data analysis based on the frequency of occurrence, were reported. In the next section the results obtained by means of more sophisticated statistical tests will be reported.

8.7 Comparison of matric results and the Gencor Bridging Programme pre- and post-test results

In all the faculty groupings under investigation a minimum level of mathematical ability is a prerequisite for access to programmes offered by the faculties. During the four-

week GBP a mathematics course which covers some basic concepts needed for successful university study is offered. The aim of this course is to get an indication of students' mathematical ability. Students' language proficiency also influences their academic performance (see 7.3.4.4). During the four-week GBP both English and Afrikaans language courses are offered. One of the aims of these courses is to get an indication of students' knowledge and use of the medium of instruction at the University. A comparison of students' matric mathematics and language results with their results for the same subjects in the GBP pre- and post-test respectively could give an indication of the extent to which the matric results can be used as an indicator of students' ability regarding these three subjects.

In order to compare students' performance in these three subjects, Mathematics, English and Afrikaans, during the final matric examination with their performance during the GBP, these performance scores were used to perform two statistical tests, namely a two-way analysis of variance (ANOVA), and a Wilcoxon matched pairs test. Since the mathematics requirements are different in the four faculty groupings and the different nature of the matric examination and the GBP pre- and post-tests might possibly influence students' performance during the GBP, two factors that were considered during the statistical analysis were the faculty in which students were enrolled, and the nature of the test.

The data that was used in the statistical tests was the 1995 - 1997 GBP students' matric results, as well as their GBP pre-test and post-test scores. These three scores were computed by calculating the average of each student's performance in Afrikaans, English and Mathematics during the final matric examination, as well as during the pre- and post-tests of the GBP respectively. In other words each student had three scores: a matric, a pre-test and a post-test score.

The two tests were performed separately on each of the three year groups. The purpose of the two-way ANOVA was to test for significant differences between the means of groups classified according to the two factors, faculty and test. The Wilcoxon matched pairs test was performed to establish whether there is a difference between the students' performance during the final matric examination and during the GBP pre- and post-tests respectively.

8.7.1 Test for differences between faculties and tests

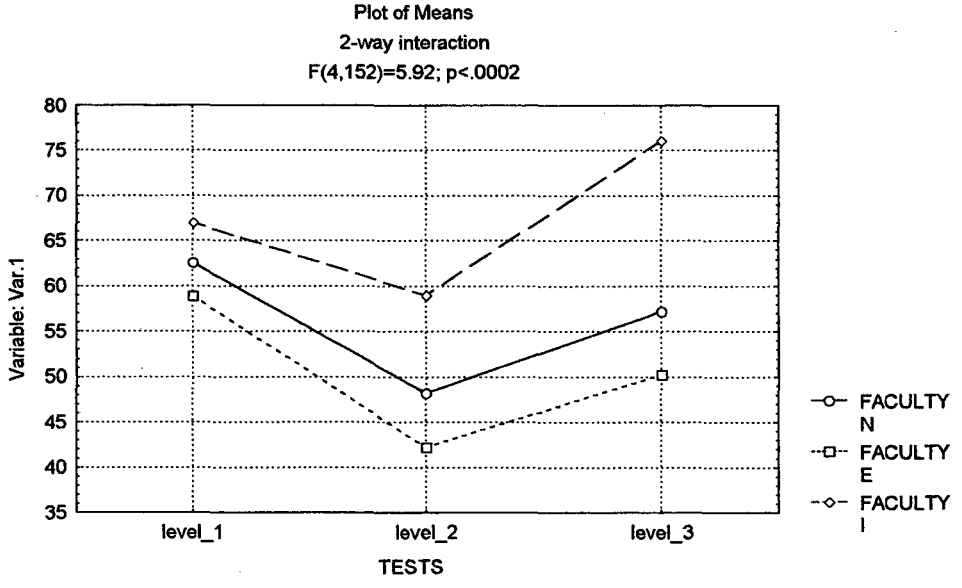
The results of the two-way analysis of variance for the three year groups are summarised in table 8.27.

Table 8.27: Significance of the influence of faculty and tests on student performance during the GBP

	Probability-level		
Effect	**1995**	**1996**	**1997**
1. Faculty	.000007*	.000003*	.000759*
2. Tests	.000000*	.000000*	.000000*
Interaction 1&2	.000188*	.138291	.075098

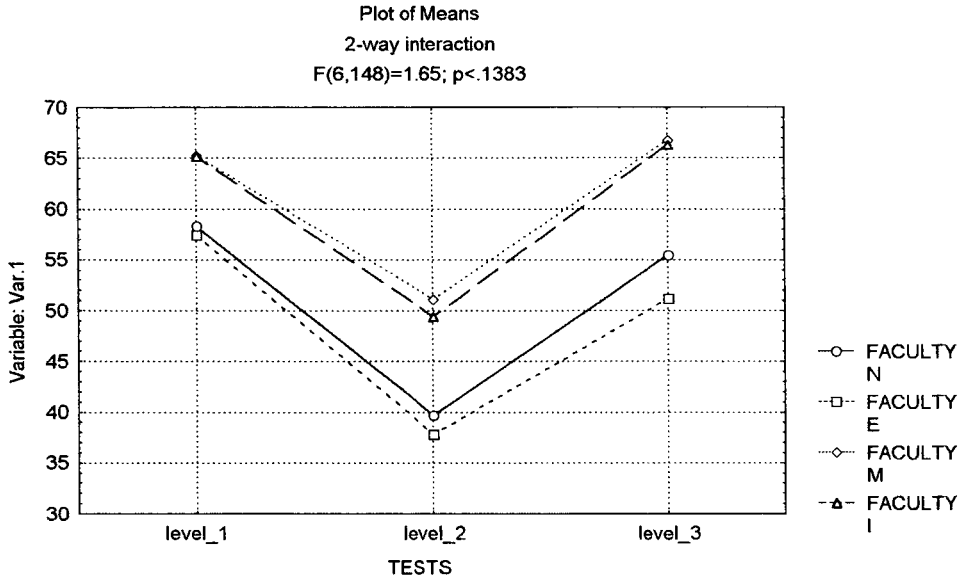
$\alpha = 0.05$

The figures in table 8.28 indicate that for all three year groups there are significant differences in students' performance on the three tests and also that students from different faculties performed significantly differently. The interaction between faculty and tests was significant ($p = .000188$) for the 1995 year group only, as can be seen in figure 8.1. For this year group the mean of Engineering students' GBP post-test performance was almost 10% higher than their matric mean while the reverse was true for both E&M and Nat students. The 1995, 1996 and 1997 year groups' matric, pre-test and post-test performance is illustrated in figures 8.1 - 8.3.



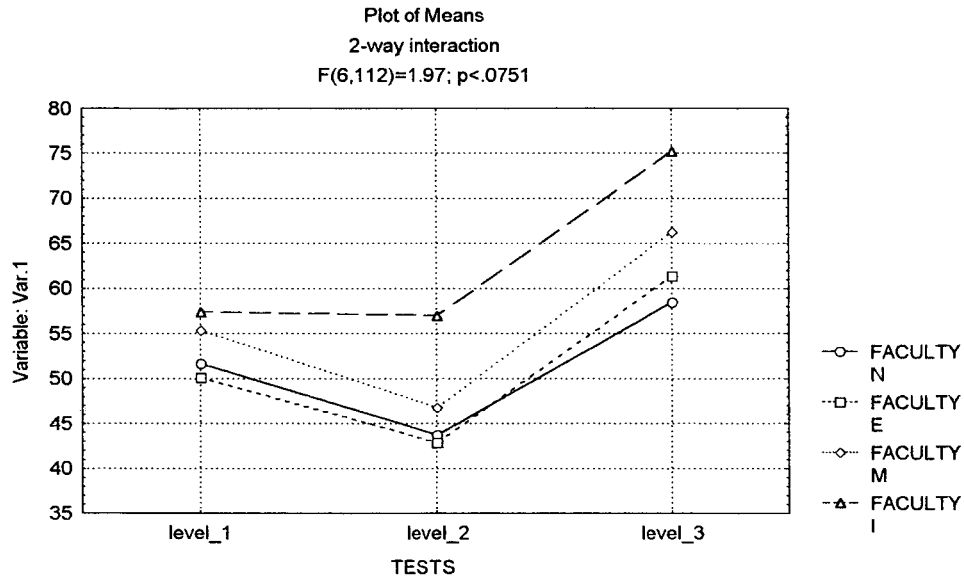
Tests: level 1 = matric, level 2 = pre-test, level 3 = post-test
Faculty groupings: N = Nat, E = E&M, I = Eng

Figure 8.1: Comparison between the 1995 year group's matric and GBP pre- and post-test performance by faculty



Tests: level 1 = matric, level 2 = pre-test, level 3 = post-test
Faculty groupings: N = Nat, E = E&M, M = M&D, I = Eng

Figure 8.2: Comparison between the 1996 year group's matric and GBP pre- and post-test performance by faculty



Tests: level 1 = matric, level 2 = pre-test, level 3 = post-test
Faculty groupings: N = Nat, E = E&M, M = M&D, I = Eng

Figure 8.3: Comparison between the 1997 year group's matric and GBP pre- and post-test performance by faculty

In figures 8.1 - 8.3 the position of each faculty grouping on the Y-axis represents the mean of the test scores of all the GBP students of the specific year group enrolled in that faculty. The graphs in these three figures clearly show the similarities and differences in performance in the various faculties. There is a pattern in the

performance of the students, namely a decline from matric to pre-test (except in the 1997 Engineering group), and then an increase again from pre-test to post-test. There are more similarities in performance between the three year groups. Firstly, the Eng and M&D students' performance on the GBP post-test is always higher than their matric results and they performed better on all the tests than the Nat and E&M students. The E&M group starts off with the lowest mean for matric performance, and then remain the lowest, except in the 1997 year group where they perform marginally better than the Nat group on the GBP post-test.

The GBP students' performance in matric and on the post-test are both relevant for their access to and course route through the University. Therefore a comparison of these points of assessment is done. If the difference between the students' performance on these two tests was insignificant, the use of the post-test for the channelling of students into a specific route within the chosen faculty would be senseless and the matric results might as well be used.

The consistent differences in the level of performance of students enrolled in different faculties might shed some light on two previous findings. Firstly, the fact that the E&M students' mean performance on all tests was the lowest of all groups, except on the post-test in 1997, might have contributed to their poor performance compared to the other GBP groups in the same year group, especially during the first historic year (see tables 8.6, 8.11). Secondly, since the GBP post-test performance of the M&D and Eng groups were higher than their matric performance explains why they found the GBP unchallenging (see table 7.3).

The similarity or difference between the specific tests was also tested statistically with a matched pairs test.

8.7.2 Results of the match between matric results, pre- and post-tests

As stated before, the Wilcoxon matched pairs test was performed on the data of each year group to compare the students' performance during the matric final examination with their performance on the GBP pre-test and post test. The results are presented in

tables 8.28 to 8.30.

Table 8.28: Comparison of matric, pre-test and post-test performance of the 1995 GBP year group

	Probability level		
	Nat	**E&M**	**Eng**
M & VT	.000000	.000001	.128200
M & NT	.001435	.000028	.027999
VT & NT	.000001	.000006	.017966

M: Matric VT: Pre-test NT: Post-test

$\alpha = .05$

Table 8.29: Comparison of matric, pre-test and post-test performance of the 1996 GBP year group

	Probability level			
	Nat	**E&M**	**M&D**	**Eng**
M & VT	.000000	.000018	.017966	.001475
M & NT	.084223	.002702	.612093	.552498
VT & NT	.000000	.000021	.017966	.001475

M: Matric VT: Pre-test NT: Post-test

$\alpha = .05$

Table 8.30: Comparison of matric, pre-test and post-test performance of the 1997 GBP year group

	Probability level			
	Nat	**E&M**	**M&D**	**Eng**
M & VT	.000379	.012.68	.002095	.241130
M & NT	.002974	.015028	.009730	.005065
VT & NT	.000027	.002220	.000438	.005065

M: Matric VT: Pre-test NT: Post-test

$\alpha = .05$

As can be seen in tables 8.28 - 8.30 the differences between the various combinations of the tests are significant at the 0.05 level in all the year groups across faculties, except in the Engineering group, where there are exceptions. These exceptions are as follows. In the 1995 year group there is no definite difference between the students' matric and pre-test performance (see figure 8.1), in 1996 the matric and post-test performance is similar (see figure 8.5), and in 1997 the matric and pre-test performance is once again similar (see figure 8.3).

Although the number of students is too small to draw conclusions from the data, the correlation of both the pre- and post-test with year 2 and year 3 respectively was calculated for the Nat and E&M GBP-FP students of the 1995 and 1996 year groups. These two study years were chosen because during the historic second year students do not follow support courses and during the third historic year they have to cope with the full mainstream curriculum. The Eng students were left out because in this faculty the FP is extended over three years. No M&D students participated in the 1995 GBP therefore their results were only included with the 1996 year group's data. The 1997 year group in all faculties have only completed their second historic year, thus no data of their performance in the full mainstream programme was available. The correlation results are presented in figure 8.4

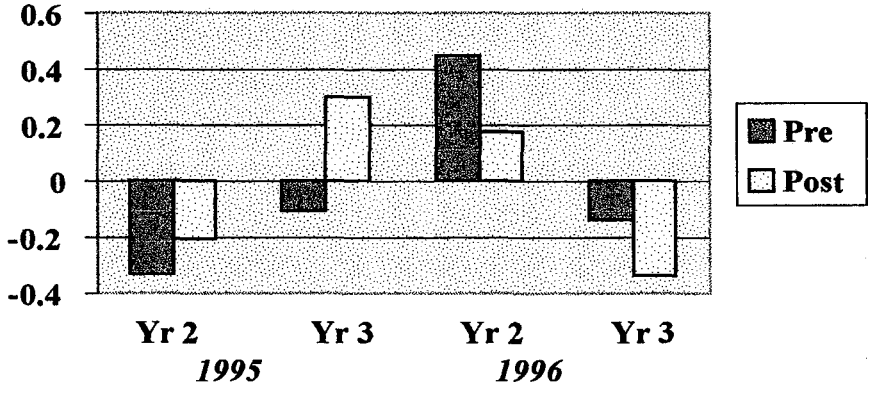


Figure 8.4: Correlation GBP pre- and post-test with year 2 and year 3

As can be seen from figure 8.4 the correlation between the two GBP tests and students' academic performance is low. There is a negative correlation between the pre-and post test with the 1995 students' year 2 performance and with the 1996 students' year 3 performance, but this negative correlation is also low. The highest correlation (0.45) is found between the pre-test and year 2 of the 1996 year group. The data used for this analysis is far too limited to allow any conclusions regarding the prediction validity of any of these tests.

In the following section some of the factors which influenced the students' performance after the GBP, during their subsequent study years, will be discussed.

8.8 Factors influencing performance during study years

From the data analysis in the first part of this chapter, the conclusion was made that apart from their matric results, there are three other factors that seem to be contributing to the differences in students' performance during their study years. These were firstly, in which faculty grouping the students were enrolled; secondly, whether or not the students had participated in the GBP and/or FP and, thirdly, the study year in which the students' performance was measured. The influence of each of these factors was tested statistically. The analyses was divided into two sections. In the first section the GBP students were treated as one group, irrespective of their further academic route and the historic year levels were used. In the second section only the GBP-FP and MS students' results were analysed and academic year levels were compared. The GBP-MS group was too small to be included as a third group in the statistical analysis in section two.

8.8.1 Test for influence of faculty, GBP and year level on performance

The data that was used in this test was performance scores of all GBP and mainstream groups, for the years 1995 to 1997. In other words, each student potentially had a score for each historic year 1, year 2 and year 3, depending on their year group and how long they had persisted with their studies. A separate three-way ANOVA was performed on the data sets of each of the year groups 1995 and 1996, and a two-way ANOVA on the 1997 data set, to establish the relationship between the three specified variables and students' academic performance. These variables were: faculty in which the student was enrolled, participation in the GBP or not, and year-level of the student. The matric average of each student was used as covariate. Because there are so many other factors that influence academic performance, apart from matric results, the use of the matric average as a covariate may, if it is related to academic performance, significantly reduce the error variance (Montgomery, 1997:149). The results of the tests for each year group are illustrated in table 8.31.

These results indicate that the factors that on their own had a significant influence on performance were: faculty in the 1996 year group with .000937 probability, and year-level with .045635 probability in the 1995 year group. All three factors together had a

significant influence on performance in both the 1995 year group (p = .000184) and the 1996 group (p = .023578). In the 1996 year group, the interaction between GBP and year-level was significant (p = .045377).

Table 8.31: Influence of faculty, GBP and year level on student performance

	Probability-level		
Effect	**1995**	**1996**	**1997**
1. Faculty	.265135	.000937*	.130881
2. GBP	.902775	.891820	.091984
3. Year-level	.045635*	.154477	n/a
Interaction 1&2	.571966	.099637	.109283
Interaction 1&3	.296549	.841849	n/a
Interaction 2&3	.194328	.045377*	n/a
Interaction 1,2&3	.000184*	.023578*	n/a

$\alpha = 0.05$ * significant

8.8.2 Test for influence of faculty and programme on performance

In these analyses students' performance during various *academic* years was the dependent variable and the influence of the factors faculty and programme (GBP-FP or MS) for which students were enrolled were tested.. A two-way ANOVA was performed for the appropriate year levels in each year group with matric as covariate. The results of the tests are reported in tables 8.32 and 8.33.

Table 8.32: Influence of faculty and GBP-FP on first academic year

	Probability-level		
Effect	**1995**	**1996**	**1997**
1. Faculty	.000003*	.068390	.022696
2. GBP-FP	.855081	.066072	.224417
Interaction 1&2	.853933	.434646	.185800

$\alpha = 0.05$ * significant

Table 8.33: Influence of faculty and GBP-FP on second academic year

	Probability-level		
Effect	**1995 2nd**	**1996 2nd**	**1995 3rd yr**
1. Faculty	.258846	.519576	.545866
2. GBP-FP	.447461	.342436	.465811
Interaction 1&2	.253081	.312012	.386422

$\alpha = 0.05$ * significant

Because the FP differs in the various faculties, it was expected that the interaction

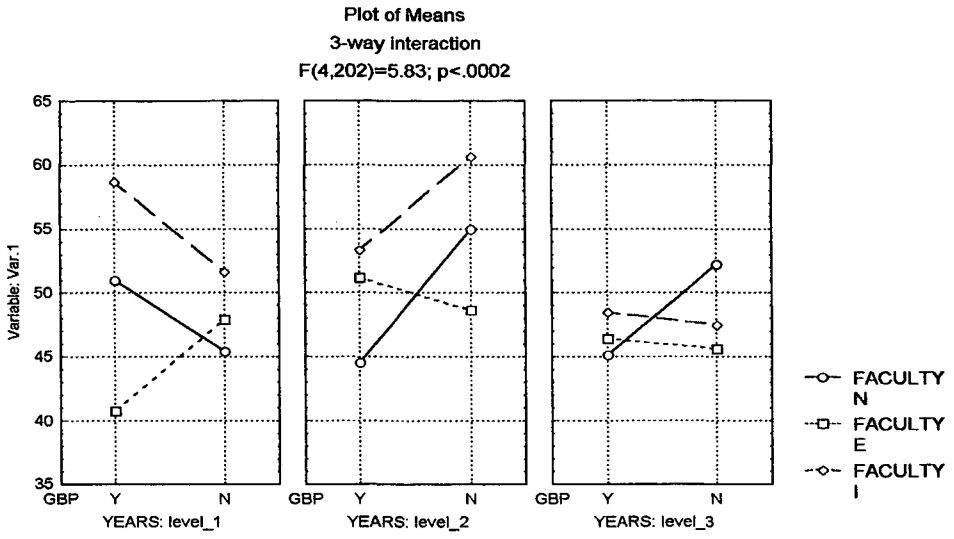
between faculty and GBP-FP would have a significant influence on students' performance during the first academic year. According to the results in tables 8.32 this is not true for any of the year groups. The interaction between GBP and year level (see table 8.31) was significant for the 1996 year group. This might be attributed to the channelling function of the GBP in which case it should also influence the results of GBP-FP students. However, it might be that the data sets used in tables 8.32 and 8.33 are too limited for valid statistical analysis. It should be kept in mind that the already low number of students in each programme in the different faculties (see table 8.18) diminishes at each year level because of the high drop-out rate (see tables 8.19 - 8.24). In order to test the possible influence of the FP with larger groups the performance of each year group was analysed. the results will be discussed in the second part of the following section.

8.9 The influence of the GBP and FP

According to the results in table 8.32, not all the factors influenced student performance, and those that did differed among the year groups. It was also found that the GBP on its own did not influence student performance significantly in any of the year groups, neither did the GBP and FP together. But together with other factors there was a significant relationship between participation in the GBP and student performance. In the following discussion the influence of the GBP alone and together with the FP is explored further.

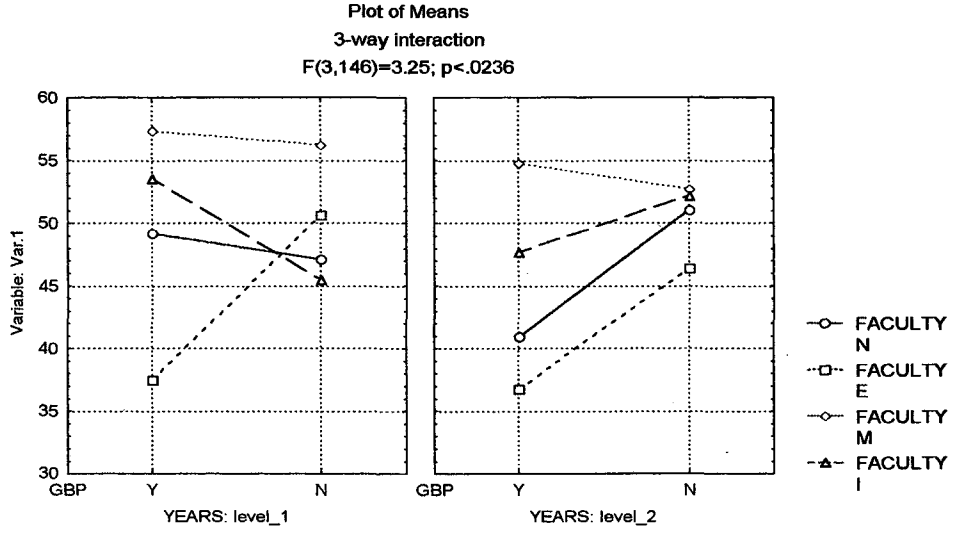
8.9.1 Influence of the GBP on academic performance

In this section a comparison was made between the performance of students who participated in the GBP, irrespective of their further academic route, and those who did not participate. Students' performance during the first three *historic* years was investigated. Based on the results discussed previously (see 8.8.1) it was accepted that there is no difference in the performance of the 1995 to 1997 mainstream and GBP students due to the influence of the GBP alone. However, the GBP together with faculty and year-level had a significant influence on the performance of the 1995 and 1996 year groups. This is illustrated in figures 8.5 and 8.6.



GBP: Y = (yes) GBP students, N = (no) Mainstream students
Years: level 1 = year 1, level 2 = year 2, level 3 = year 3
Faculty groupings: N = Nat, E = E&M, I = Eng

Figure 8.5: Influence of the interaction between GBP, faculty and year level on the performance of the 1995 GBP and mainstream students.



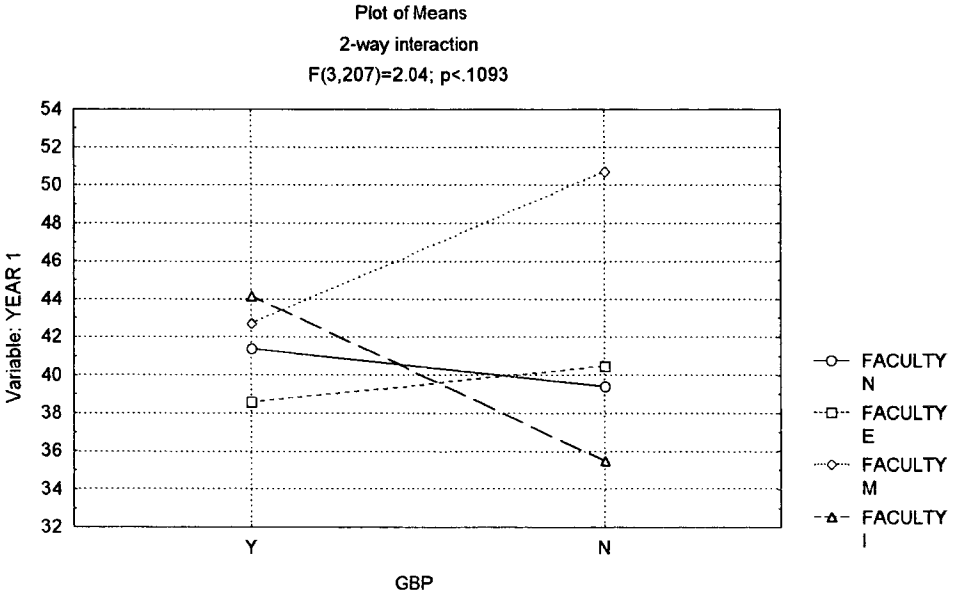
GBP: Y = (yes) GBP students, N = (no) Mainstream students
Years: level 1 = year 1, level 2 = year 2,
Faculty groupings: N = Nat, E = E&M, M = M&D, I = Eng

Figure 8.6: Influence of the interaction between GBP, faculty and year level on the performance of the 1996 GBP and mainstream students.

The comparison between the graphs in figures 8.5 and 8.6 indicates the following. In year 1 the performance of the GBP students is better than that of the mainstream students in all the faculties, except in Economic and Management Sciences. In year 2, however, this is not the case. In this year the performance of the mainstream students

is better in the Natural Sciences and Engineering for both year levels, but differs in the other two faculties. In the Economic and Management Sciences the 1995 GBP year group's performance is better during year 2 than the performance of their mainstream peers, but the situation is reversed for the 1996 year group. There were no Medicine and Dentistry students during 1995, but in the 1996 year group the performance of the GBP students is better than that of the mainstream group. However, this could also be due to the structure of the Medicine course and the fact that the majority of the GBP students are probably still on the main campus during year 2, while the mainstream students are already on the Tygerberg campus.

The overall trend established here, that there is an upswing in the performance of the mainstream students in year 2, and that they then perform better than the GBP students, strengthens the same finding in the first part of this chapter during the analysis based on a frequency count (see 8.4). The 1997 year group did not have different year-levels that could be tested, and there was insufficient proof to accept that the GBP, either on its own or together with faculty, had a significant effect on the performance of the students. The difference in performance during year 1 between the GBP and MS groups in the four faculties is illustrated in figure 8.7.



GBP: Y = (yes) GBP students, N = (no) Mainstream students
Faculty groupings: N = Nat, E = E&M, M = M&D, I = Eng

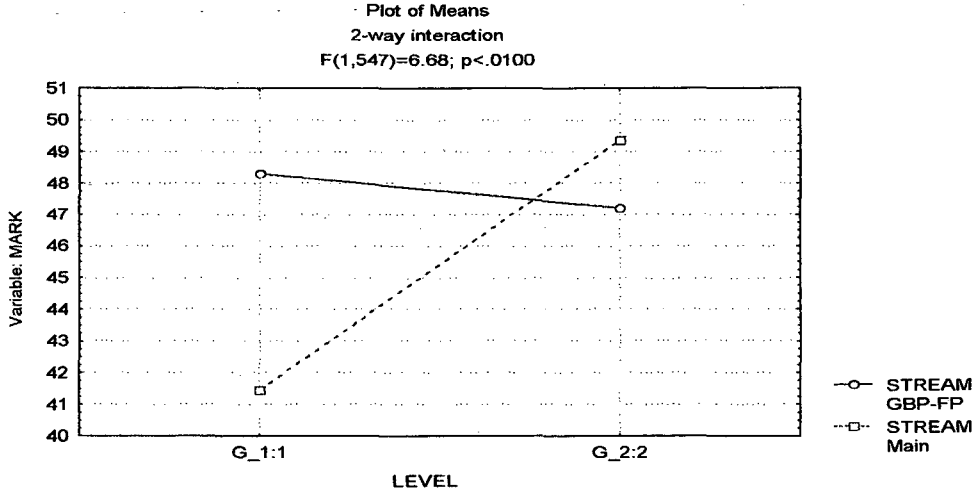
Figure 8.7: Influence of the interaction between GBP and faculty on the performance of the 1997 GBP and mainstream students.

As illustrated in figure 8.7, the GBP Nat and Eng faculty groupings performed better than their mainstream peers, while the situation was reversed in the E&B and M&D groups. Except for the M&D group, these results corresponded with the results of the 1996 and 1995 year groups with regard to their performance during the first historic year (see figures 8.5, 8.6).

The influence of the interaction between GBP, faculty and historic year level on student performance has been illustrated in figures 8.5 to 8.7. The influence of the GBP and FP together will be discussed next.

8.9.1 Influence of the GBP and FP together on academic performance

In this analysis the performance scores of all GBP-FP students and all MS students of the three year groups 1995 and 1996 who were still studying by the end of 1998 were used. The 1998 results had to be included because the 1996 year group completed their second *academic* year only by the end of 1998. A two-way ANOVA was performed to test the influence of programme followed (referred to as "stream" in the analysis) and *academic* year level on student performance. The results of the analysis were that the programme followed (GBP-FP or MS) had a significant influence (p = .000014) on student performance and that the interaction between programme and academic year level had a significant influence (p = .010028). The combined influence of programme and year level on performance is illustrated in figure 8.8



LEVEL: G_1:1 = 1st Academic Year; G2:2 = 2nd Academic Year

Figure 8.8: Influence of the interaction between GBP-FP and year level

The mean performance of each group is indicated on the Y-axis. As illustrated in figure 8.8 there is a significant difference in the performance of GBP-FP students and MS students at different year levels. The performance of GBP-FP students declines slightly from the first to the second academic year, while there is almost a ten percent improvement in the mean scores of MS students.

The significance of the relationship between participation in the GBP-FP and students' performance during the first and second academic years implies that the findings in the previous section (see 8.8.2) should be reconsidered. Further analyses of student performance in different faculties, as well as during the third, fourth and fifth academic years (where applicable) should be made before any final conclusions can be reached regarding the long-term influence of the GBP and FP.

8.10 Conclusion

Based on the analysis of the quantitative data, the answers to the research questions posed in 8.1.1.1 to 8.1.1.6 are as follows:

- The performance of GBP students fluctuated during their study years and there was no fixed pattern in the fluctuation in performance at different year levels.
- Participation in the GBP and /or FP apparently kept students longer in the system, but the total percentage of drop-outs was higher amongst GBP students in all faculties in the 1996 and 1997 year groups than amongst their mainstream peers. The situation was reversed for the 1995 year group where the drop-out figures were lower for GBP students than for MS students in all faculties. When the GBP group was divided the findings regarding the GBP-FP students corresponded with the findings regarding the whole GBP group. The reason for this was probably because the total number of GBP-MS students constituted only about 27% of the whole GBP group.
- There was no statistical proof that the differences in students' performance during various study years could be attributed to the nature of the FP in a specific faculty. Although various statistical tests were performed, the numbers were too small to draw valid conclusions from the results.
- Participation in the FP seemed to influence students' transition from the first to the

second academic year positively in the sense that the mean performance of the group stayed relatively stable. However, the mean of the performance scores of MS students was higher by the end of the second academic year than that of GBP-FP students. There was also no fixed pattern in the difference in performance between the first and second academic years of individuals participating in the FP.

- The investigation covered four study years. This period was too short to draw any valid conclusions regarding the influence of the GBP and FP on completion rates. The limited results indicated that there was no difference between the overall percentage of GBP-FP and mainstream students who graduated within the minimum duration of the programme they were enrolled for, but there seemed to be a difference between graduation percentages of the various groups (GBP-FP, GBP-MS and MS) in different faculties.
- There was a difference in the performance results of GBP students in all three year groups and across faculties on the matric examination and on the GBP pre- and post-tests. But there was in each year group some similarity between the Engineering students' matric performance and their performance on either the pre- or the post-test. No significant correlation could be found between either the GBP pre- or post-test with student performance during their study years. The data was also too limited to perform statistical analyses that could test the prediction validity for academic success of students' matric results, or either of the GBP tests.

The final conclusion that can be drawn from the analysis of the quantitative data regarding the GBP, is that there is no statistical proof that the GBP has a significant influence on the academic performance of students at the University of Stellenbosch during all their years of study. However, the GBP together with the FP seems to influence students' performance during their first and second academic years. The influence on later study years could not be tested because there was not sufficient data available yet.

In the following chapter the combined interpretation of the qualitative and quantitative research will be given. Conclusions will be drawn based on all the research involved in this study, and some recommendations will be made.

CHAPTER 9
CONCLUSIONS AND RECOMMENDATIONS

To address the problem of under-prepared students, the University of Stellenbosch (US) has established several academic development initiatives. Two of these, namely the Gencor Bridging Programme (GBP) and the foundation programme (FP), have been investigated in this study. In the following discussion conclusions will be drawn, based on the findings of the literature review, qualitative and quantitative investigations. The implications of the findings both for academic development and for the University will be discussed, and recommendations will be made. Some of the important aspects that could not be included in this study, but should be investigated during further research, are indicated. The discussion starts by revisiting the initial problem that gave cause to the study.

9.1 The problem defined

Students gain access to the University on the strength of their performance during the final school examination. Once they enter the higher education arena they experience a decline in their academic performance, due to several and different reasons. Many students recover during their first year and then perform at a level similar to, or better than, their initial level of performance at entry. Others recover sufficiently to enable them to obtain a qualification (Pascarella & Terenzini, 1991:277). This is not always the case with the new generation of students, of whom a large percentage leave the University during or at the end of their first year.

To address this problem the University has established several academic development initiatives. In spite of this there are still large numbers of students who drop out of the system without obtaining a qualification. These students are often from schools in disadvantaged areas. The problem is that the persistence of these students at the US is relatively low, in spite of academic development intervention, and that most of the students who are at risk of dropping out are first generation students.

9.2 Focus of the investigation

There are various ways of investigating this problem. In this study a two-pronged approach was followed. Firstly, to investigate the nature of specific academic development initiatives of the University and their effect on student performance and, secondly, to identify the factors that influence students' performance either positively or negatively. The academic development programmes (ADP) that were investigated were primarily the Gencor Bridging Programme (GBP) and, as a secondary focus, the foundation programmes (FP) in the faculties in which the GBP students are enrolled.

9.3 Conclusions of the study

The overall conclusion that is drawn from this study is that factors related to both the University and the students are responsible for the high drop-out rate of non-traditional students, and that the effect of the intervention by ADP is not yet strong enough to counter all of these factors. This conclusion was based on the findings of the literature review, as well as the quantitative and the qualitative research. These findings and their relevance to the problem will now be explained.

9.3.1 Conclusions relating to the University

Over the past three decades several trends in higher education have affected institutions world-wide (see 2.2). The trends that will be considered in relation to the problem under investigation are quality issues, escalating student numbers and change in the student profile, and the decline in the number of permanent members of staff. The last two of these are of special relevance to the study, because they both imply less individual attention to students by academic staff. The effect of the globalisation of knowledge and advances in educational technology; as well as the insitution's role in the development of student autonomy and how this can contribute to students' improved self-concept, will also be discussed.

9.3.1.1 Quality issues and accountability

The emphasis on standards in higher education was brought about by the changing student population and the tension between quality and equity (see 2.2.2). South African higher education was not exempted from changes that have to be faced by other institutions in the international higher education arena. Although some of the strategies employed by institutions in other parts of the world can serve as models to devise appropriate ways of managing change, very few of these international strategies can be employed directly, without any adaptation to the South African situation.

Government involvement, demands for greater accountability and an emphasis on performance indicators and quantitative measures of achievement and productivity pose a threat to the developmental approach to education. Not only is students' overall development hardly quantifiable, but the demand for many assessment scores, for example, prevents lecturers from being innovative in their teaching and assessment approach. Attempts to quantify all student learning with performance scores, or to prove the productivity of academic staff by means of checklists, undermine rather than promote quality. This approach also adds to the workload of academic staff and leaves them no time to be creative, to do research, or to encourage out-of-class contact with students.

The conclusion in this regard supports Voehl's (1994:29) statement that quality should not be treated as an add-on or something that is inspected afterwards. It should be ***designed into the system***, not only regarding the content of courses, but the teaching and assessment methods and processes should be planned to facilitate quality learning.

9.3.1.2 Escalating student numbers

Since the widening of access to higher education, student numbers have escalated and the composition of the student populations on campuses has changed drastically. The heterogeneous character and diversity of backgrounds, needs, expectations, values, goals and levels of academic preparedness complicate the task of educators, and have various implications. To bring about effective learning in a classroom with large

numbers of diverse students, changes to the traditional practices, both inside and out of class, are essential.

The very large classes are often first-year student groups that are taught by new, young lecturers. The strain on the lecturers required to manage such large numbers of students gives them an appearance which discourages students from consulting them after class. Because of this situation, misunderstandings and other problems which might arise in class are seldom attended to. As indicated by Tinto (see 2.5.3.2) student-staff relationships are an important factor in students' assessment of their standing in the academic life on campus, and the quality of their contact with staff is one of the significant predictors of persistence.

Both students and the University have a responsibility to improve this situation. It is the students' responsibility to make sure that they understand the material that has been presented. The University's responsibility is to provide the necessary infrastructure and to encourage and enable lecturers to structure their classes in such a way that students are more involved and more self-directed.

9.3.1.3 More part-time staff

Because of the reduction in government funding to higher education institutions, the trend is to rationalise and not to appoint many permanent members of staff. The consequent increase in staff workload, together with escalating student numbers, causes the institution to make use of part-time staff. The positive side of this kind of lecturer is that he/she is often drawn from the environment in which students will find employment after graduation. They are thus in a position to be able to use practical examples from their own experience in their teaching, which may add to the students' understanding of and interest in the subject. There are however several problems related to this. These can be due either to the fact that part-time staff are often not involved in the overall planning and development of courses, or that they have insufficient commitment to their teaching, or to the fact that they are not permanently on campus.

Since part-time lecturers are usually not involved in the overall planning, their activities might not be properly co-ordinated with those of permanent staff members. This might lead to duplication or to incongruence in the principles or material which is emphasised. In both cases this results in confusion for students. It was found during the qualitative investigation that two lecturers who present the same course often contradict each other and cause confusion.

It is unrealistic to expect from part-time lecturers that they devote as much time and effort to their teaching as permanent staff. The former also do not have the same opportunities as their colleagues who are appointed full-time to keep abreast of new developments. Consequently, part-time lecturers are not necessarily able to be or interested in being innovative in their teaching or in experimenting with new methods or approaches. Part-time staff usually use the method they are used to and feel safe with, namely the traditional, non-interactive lecture.

Because they are not on campus permanently, part-time staff often do not have the time or the commitment to do research. If their work environment off-campus is not such that they are aware of new developments in their field, it may cause the contents of their presentations to be outdated. Another problem related to the fact that they are not on campus is that there is no, or very little, opportunity for out-of-class contact with students, which might add to students' reluctance to consult lecturers after class. The importance of this kind of staff-student contact has been stressed throughout this study.

9.3.1.4 Advances in technology

The explosion of developments in technology also affects higher education. The positive side of this is the availability of information and knowledge to which anybody now has access by electronic means. This increases the possibilities for independent learning tremendously. Academic staff can enrich their subject content with information which they would not have had access to without, for example, Internet facilities. They can also direct students to additional information which is not available in the library. Technology opens up a new world for higher education and for innovative student support. However, the use of technology as part of a course has practical implications

which can impact negatively on the total quality of courses. These can be divided into two categories, namely, the availability of facilites to all concerned and the maintenance of these facilities, and the training and support of both staff and students in order to use these facilities effectively for educational purposes.

The facilities necessary for the incorporation of technology into courses are costly and quickly outdated. Without the necessary infrastructure in the educational environment which enables the use of, for example, the information highway in courses, the inclusion of electronic resources in the design of courses and programmes is bound to cause problems. Furthermore, the design of course units which can be used for self-study or in class is time-consuming and thus costly. If they are used in class, the lecture halls must be equipped with data projectors or there must be a pool of equipment from which lecturers can borrow. If students must use electronic self-study packages they must all have access to computers.

The other category of problems related to the use of new technology in courses, namely the training and support of staff and students is also costly and time-consuming. There is, however, another potential danger here to the overall quality of the academic activities of the institution. Some very good and committed educators who are not closely involved with technology, may feel threatened by the new developments. In an environment where new technological developments are overemphasised these lecturers could become marginalised and demotivated. This would be a loss to the institution and the students.

9.3.1.5 Student autonomy and academic self-concept

During the qualitative investigation it became clear that some students realise they should be less dependent on their lecturers. However, not all of them are capable of working independently. This conflict between the need to be less dependent and students' inability to take control of their own learning, manifested in remarks that accused lecturers of unfairness, as well as in signs of suppressed anger with lecturers who force them to work independently. These lecturers actually have the desired approach to teaching. Where they probably go wrong is in not assisting the students to

gradually develop into independent learners. The other problem is that these lecturers who promote student autonomy are in the minority. Being passively exposed to lectures is easier for the students, and therefore they are angry with academic staff who do not take the easy way out.

As stated above, students should be enabled to take responsibility for their own learning. An important aspect related to students' ability to cope on their own, is the development of their self-regulating abilities. This includes the development of three different aspects of academic learning, namely the regulation of behaviour, of motivation and affect (see 4.5) and of cognitive strategies (see 4.4.4.3). By developing these three aspects the students' ability and willingness to take responsibility for their own learning can be enhanced. The regulation or management of each of these can be developed by exposure to experiences which makes the practice of these skills and strategies possible. What is meant by each of the three aspects, is the following.

Self-regulation of behaviour refers to the student's control over available resources in the academic environment, such as time, a place to study, facilities like the library and technology, peers, and academic staff. *Self-regulation of motivation and affect* involves students' responsibility to control and change their attitudes and beliefs (see 4.5.1.2), as well as their goal orientation, which directs and motivates them to be successful in a specific course. Students can also learn how to control the emotions, such as anxiety, which affect their performance negatively. The third aspect, *self-regulation of cognition,* refers to metacognitive strategies (see 4.3.3.3).

By developing their self-regulating abilities, students become more in control of their own learning, and this feeling of control enhances their academic self-concept. The importance of a positive academic self-concept for academic success, and its influence on student persistence, has been one of the important and recurrent themes of this study. The crucial role of the students' academic self-concept in their academic performance, together with their reliance on peers for academic and emotional support, were two important findings of the qualitative investigation (see 7.5).

9.3.2 Conclusions relating to students

The conclusions related to students are presented in two sections. The first three factors that are discussed deal with problems due to the external, environmental factors that were found during the study to affect student learning. These are educational background, large classes and being a commuter student. The second group of three factors deals with problems due to internal matters such as values, attitudes and beliefs. These factors are different perceptions of success, student persistence and attitudes towards learning, and the absence of a learning culture.

9.3.2.1 Educational background

The differences in the educational backgrounds of students who gain access to higher education is one of the main reasons for the need for academic development initiatives which focus on students. There are several factors which have caused the differences in the quality of education in South *African* schools. The education of under-privileged communities, in particular, was affected negatively by these factors.

The most important of these were the separation between white, *black* and *Coloured* pupils, the difference in the legislation regarding compulsory school attendance for different population groups, the varying quality and unequal provision of school accommodation and facilities, the lack of qualifications and abilities of teachers in certain areas, high student:teacher ratios, the curriculum, the medium of instruction, evaluation procedures and school governing bodies. Political issues contributed largely to all these factors, and consequently to the inequality in South *African* education.

One of the serious issues caused by the inequality in school education is the inferiority of the mathematics and science education of many students from disadvantaged areas, which leads to their exclusion from certain disciplines, for example engineering and the physical sciences. One of the aims of the GBP is to identify students who have the potential to succeed in these disciplines with the additional support that is provided during the foundation programme. There is a problem regarding this, which will be explained during the discussion of learning and development (see 9.3.3.7).

9.3.2.2 The effect of large classes

One of the big problems of large numbers of students in a class is the feelings of anonymity and not-belonging that are experienced by students (Gibbs, 1992:5). These feelings contribute negatively to students' integration and consequently to their commitment to the institution. This is also a reason for drop-out, according to Tinto's *integration theory of persistence* (see 2.5.2). The friends students make on campus are usually their classmates or other students with whom they share accommodation. In large classes it is more difficult to make friends. Especially commuter students suffer because of this, due to the fact that they do not stay in a residence on campus where they can make friends. This means that they have very little out-of-class contact with other students. Apart from the isolation brought about by this situation, which might lead to drop-out, they also do not share in the benefits of the informal, out-of class learning environment.

The feelings of anonymity in a large class mentioned by Gibbs were also findings of the qualitative investigation. However, there is another problem which is related to the students' academic self-concept. Because of their fear of appearing unintelligent, students are reluctant to ask questions in a large class. This implies that if they do not have friends to ask, or if the friends do not know the answer, students' questions stay unanswered, because the students indicated that they do not often consult the lecturer after class.

9.3.2.3 Commuter students

Both the academic and social integration of commuter students into the higher education environment is more difficult than that of students who live in a residence on campus. Commuter students have specific kinds of problem which influence their performance (see 2.3.1). Some of these are the lack of a suitable place to study, the time lost by their daily travelling to and from classes, the absence of peers in their immediate environment with whom they can discuss the work, and their consequent exclusion from the out-of-class, informal learning environment.

Many of the students who were subjects in this study are commuter students. During the qualitative investigation it became apparent that these students also experience the problems mentioned above at the University of Stellenbosch.

The findings that have been highlighted so far, have dealt with the social and academic environment of the student and with interpersonal factors which influence performance. The next section includes intra-personal factors that influence academic performance.

9.3.2.4 Different perceptions of success

An individual's personal goals and the values of the society in which the individual functions determine the person's perception of success (see 2.4). If non-traditional students' goals and perception of success in the higher education environment differ from those of the institution at which they study, they might fail to reach the minimum standards required to obtain a qualification at the specific institution. This will probably be due to insufficient effort, rather than to a lack of ability. This point will be explained further in the discussion about a learning culture (see 9.3.2.6).

9.3.2.5 Student persistence and attitudes towards learning

Theories of student persistence emphasise the importance of various factors that influence persistence. These are the match (fit) between the student and the institution, the student's intent (goals), the importance of positive relationships with, and encouragement from, academic staff, peers and family, as well as the inter-relatedness of all these factors (see 2.5). These factors were further divided into three categories, namely those related to the student him/herself, factors related to other people, and those related to the institution.

Research regarding the factors related to the student him/herself highlighted the differences in first generation and other students' experience of the transition from school to a higher education institution (see 2.5.3.1). These differences were investigated in relation to pre-entry conditions, transition processes, and experiences while attending a higher education institution. The conclusion was drawn that there are more factors in the adaptation process that are new to first-generation students.

Furthermore, the support and encouragement that they get from their home environment, if any, is often not enough to sustain their level of motivation to persevere. Therefore they are more dependent on the support of, and encouragement by, peers and staff in the higher education environment.

The pre-entry conditions of first-generation students often give rise to a weak academic self-concept. If this self-image is not built up soon after their entry into the higher education environment, these students get despondent and drop out of the system (see 4.5.2). In this sense, formative assessment with regular feedback, and developmental activities like those related to the GBP and foundation programmes, are very valuable.

During the transition stage some first-generation students find themselves between the value systems of two groups - often cultural groups - namely that of their home environment and that of the higher education environment. If all their friends are also still in the home environment, which might well be the situation with commuter students who attend large classes, there is no social integration and very little academic integration with the institution. This might lead to early drop-out. The creation of opportunities where students can make friends among other students who study with them, so that they can test their ideas and values against those of peers, is very important.

The better the students' academic self-concept, the more motivated they are, and the more willing to spend time and effort on academic activities. This leads to further achievement and more motivation, which results in the further improvement of their academic self-concept. There are, however, also other factors that determine the students' level of effort, namely their own expectations, as well as their perception of course and staff expectations. The insecurity of students in relation to what is expected of them often leads to low effort and low performance. This was confirmed by the qualitative research.

There are three very positive potential outcomes locked up in the fact that students' effort is affected by their perceptions of staff and course expectations, and that students expect the higher education environment to be different from school. These are, firstly,

that an attitude of self-direction and inter-dependence can be instilled in them right from the start and, secondly, that they must realise that a lot of effort is needed to succeed.

Since the transition process involves adaptation to a new academic environment, and students are not sure what to expect, their introduction to this environment could be such that their first impression is that certain practices are the norm. In other words, the higher education environment can convey a message of high expectations regarding effort, self-direction, independence and a co-responsibility for their own learning right from the start. If, instead, their first impression of the environment is that it is a place where they passively listen to lectures, are spoon-fed, and provided with notes, this is what their perception of expectations in the higher education environment will be. In such a case, many of the expectations will not be much different from school, except that the workload will be heavier. Efforts to change this perception at a later stage and to develop students to become independent learners will be much more difficult, and will probably be met with resistance.

The third potentially positive outcome of the relation between students' perception of the course and the lecturer's expectations, and the effort the students put into their academic activities, as well as their expectations of a higher education environment that will be different from school, is that these can be used to create in them a new attitude towards learning. Attitudes are formed by peoples' previous experiences, and they transfer attitudes to a specific situation to similar kinds of situation (see 4.5.1.1). It is difficult to change a person's attitude. Students from schools in disadvantaged areas often have a negative attitude towards learning, based on their previous experiences at school. If the perception can be created that higher education is completely different from school, the similarity of the two situations will be lessened. Consequently, the automatic transfer of the school-based negative attitude towards learning might be prevented. New and different experiences could result in the formation of an attitude that is different from the one that was formed at school. In other words, if students can perceive school and university as two different situations, and their perception is reinforced by different experiences at the university, accompanied by different expectations, they might develop a new, more positive attitude towards learning in higher education than that which they had towards learning at school.

This also has implications for the fostering of a culture of learning. The culture of an organisation is formed by the shared values of the people in the specific organisation (see 3.3). It was also explained earlier in the study (see 4.5.1.1) that values are a collection of attitudes formed around some central idea. These attitudes are organised in a hierarchical way, and the importance of an attitude within a value system is determined by its position in the hierarchical organisation of attitudes within the system. If students perceive school as one central idea and university as another central idea and each has its own value system then, based on positive learning experiences in higher education, their attitude towards learning in their higher education value system might rank higher than it had within their school value system. This might mean that they would be prepared to devote more time and effort to learning at university than they did at school. There are several reasons for the absence of a learning culture in schools in disadvantaged areas (see 3.3).

9.3.2.6 Absence of a learning culture

A learning society is a society in which everybody is enabled through effective education and training to be committed to lifelong learning One of the key characteristics of lifelong education as defined by the Unesco Institute of Education (Candy 1991:15) is:

> *"the constant acquisition, renewal, upgrading and completion of knowledge, skills and attitudes made necessary by the constantly changing conditions in which people now live".*

Education that promotes lifelong learning is also a goal of the new South *African* education policy (Department of Education 1997:14). However the real situation in many schools, especially in disadvantaged communities, is that there is a complete absence of a learning culture. The reasons for that, as identified by this study (see 3.3), are the following. The political situation in the country was the most important factor which caused the inequality in South *African* education. The other factors which stemmed directly or indirectly from the political situation are the low socio-economic context in which schools had to function, the violence and unsafe school environment, the absence of equal opportunities in the job market, the lack of parental involvement,

the need for leadership capacity in schools, and the poor relationship between pupils and teachers.

As stated by Vygotsky (see 4.3.2.1) socialisation is very important in the development of the child. The developing person acquires attitudes and values through social contact with significant others and through experience. It is accepted that for the very young child social contact and experience of the outside world would be mainly limited to the immediate family and the home environment. It follows that the habits, beliefs and values of the parents and the educational richness of the environment would play a significant role in the development of the child. However, in lower socio-economic families, where siblings usually look after younger members of the family while the parents are at work, the young child's social contact is with other slightly older children and with unemployed adults in a poor, often unstable environment.

Once the child goes to school, the values and experience of the teachers are mediated to the child. If teachers are properly qualified and the circumstances in the school are favourable, this might compensate partly for the loss of parental attention and the lack of early exposure to a stimulating environment. This is, however, seldom the case in schools situated in disadvantaged areas, where many of the teachers are not properly qualified and the facilities are lacking or of a poor quality (see 3.2.3). The teachers' inability to provide the children with intellectual stimulation hinders their development even further and leads to the cultivation of certain non-academic habits, such as not thinking critically, rote learning and a negative attitude towards learning.

If teachers are under-qualified and thus unable to answer questions, children are discouraged from asking questions or querying any statement made by the teacher. There are also other factors relating to the community that forced the older generation to accept what was said without questioning, for example the fear that asking questions could cause trouble with the authorities. This same attitude is transferred to the children. All of these factors restrict the development of critical thinking skills.

The fact that the highest authority in the education environment during the previous political dispensation was always in the hands of white people and that government acts

restricted the power and freedom of action of teachers, smothered the development of self-reliance, responsibility and accountability in black teachers. Since young students adopt the values and attitudes of their immediate society, and their own experience is shaped by the example of adults in their society, the same attitudes and the approach of following the way of least resistance which has been perpetuated within the community, is not changed by schooling.

Another important factor is the demoralising resolution of conflict. When young adolescents reach the stage when they start to question everything, there are not always satisfactory explanations of reasons for certain practices and attitudes. The despondency and frustration caused by this led to rebellion and disruptive behaviour, which is one of the reasons for the absence of a learning culture in many black schools.

The fact that for many years job reservation and other political considerations caused the academic efforts of black people to go unrewarded with equal job opportunities, stifled the peoples' enthusiasm, motivation and desire to work hard in order to achieve. A work ethic that values industriousness, conscientiousness and accountability is not developed in such an environment. This attitude of parents and other adults in the community is carried over to high schools, where students considered it senseless to put in a lot of effort to achieve academically, because this would not be rewarded or benefit them in the job-market (see 3.3).

All of this led to the problem which has now to be addressed by academic development initiatives in the higher education environment, namely the under-preparedness of many students, due to their poor educational background.

9.3.3 Conclusions relating to ADP

The conclusions relating to ADP were drawn regarding the influence of the GBP and FP on academic performance, the students' perceptions of the value of both the GBP and FP, the influence of these programmes on student retention, the long-term value of the intervention and the influence of the FP offered in different faculties, on student performance during their later study years at university. The reliability of matric results

as an effective measure on which to base the channelling of students, was also questioned.

9.3.3.1 The influence of participation in the GBP and FP on student performance

The GBP and FP were investigated quantitatively and qualitatively, but in this discussion the focus is on the quantitative investigation. The interpretation of the results of the frequency analyses and the statistical tests led to the following conclusions. The GBP students' level of performance fluctuates from one year to the next and there is no fixed pattern in this fluctuation (see 9.3.3.6). The extent of the influence of the GBP and FP on students' performance in their later study years is uncertain. The programmes seem to have a positive influence on students' performance during their first *historic* year and slightly less positive on their first *academic* year at the University. There was, however, no statistical proof that there is a significant difference between the overall performance of the GBP students (both GBP-FP and GBP MS) and their mainstream peers in any of the year groups. This in itself is a positive result for the following reason: if there is no difference between the two groups it might be that the channelling function of the GBP keeps students in the system. If they had followed the more difficult programmes of their initial choice, they probably would have failed and/or dropped out of the system. Definite conclusions about the effectiveness of the channelling of students could, however, not be reached.

The findings regarding the influence of the GBP and FP together were based on too limited data to reach any final conclusions, especially in relation to differences in the various faculties. However, when the mean scores of all GBP-FP students in each year group were compared to that of their mainstream peers, it was found that the transition of the GBP-FP students from the first to the second *academic* years was smoother than that of their mainstream peers. There was not a dramatic decline in the mean performance of each of the two GBP-FP year groups that could be investigated to establish the influence of the FP on transition. There was however fluctuation in the performance scores of individual students in each group.

9.3.3.2 Students' perceptions of the GBP and FP

The results of the qualitative investigation indicated that the students' perceptions regarding the academic value of the GBP and FP differed. The most important findings of the qualitative investigation were as follows. Students from different population groups and in different performance categories experienced the GBP and FP differently. Both programmes were perceived to have more social than academic value. Students relied heavily on peer support within their own cultural group. Students' insecure academic self-image manifested in various kinds of behaviour which complicates the learning process.

The fact that students made friends during the GBP which they kept in later study years, and that they support each other, are positive results. This means that the basis for formally organised peer support groups already exists and can be developed.

Students' academic self-concept is often low because of their educational background. This prevents them from taking part in certain classroom-related activities which are designed to develop their reasoning and communication abilities, and perpetuates the tendency of trying to rote learn the contents of text books and class notes without understanding the learning material.. Their low academic self-image also prevents them from asking questions during and after class. This once again emphasises the importance of creating opportunities in the structure of educational activities which will build the self-concept of the students, for example peer-teaching and formative assessment (see 5.2.3, 5.3). Academic self-concept is also an important factor in students' integration and consequent persistence in higher education (see 9.3.4).

9.3.3.3 Drop-out rates of GBP and mainstream students

In this discussion, unless specifically stated otherwise, GBP students are referred to as one group, that is, all GBP-FP and GBP-MS students together.

The highest drop-out across faculties in all year groups of both GBP and MS students occurred between year 1 and year 2 (see 8.5). There was, however, no other fixed pattern in the drop-out rate across faculties and year levels.

Only in the 1995 year group was the total drop-out of GBP students in all faculties lower than that of MS students. The situation was reversed in both other year groups, with the total drop-out of GBP students much higher than that of their MS peers. The lower drop-out rate of the 1995 year group might be positive, since students in this year group were the longest at the University at the time of the investigation. It might imply that the long-term influence of the GBP and FP is more positive than the short-term influence.

The lowest drop-out rate of all groups was recorded in the Medical and Dentistry MS group (see tables 8.16, 8.17). There was no pattern in the persistence of Economic and Management Science students. The drop-out rate in this faculty fluctuated to extremes across year groups and between GBP and mainstream students.

Another factor that has to be taken into account is that all the comparisons between the GBP and mainstream students that concern year-level are made on students' historic year-level. This was done deliberately, because it made more comparisons between year groups possible. But the way in which the comparisons were made affects the conclusions. The comparison of historic year-levels implies that, except for those few students who went straight into the mainstream after the GBP, the GBP students are always academically a year behind the mainstream group. If the results are interpreted in terms of academic instead of historic years, only a few comparisons regarding drop-out rates are possible (see 8.6.1). In the 1995 year group the drop-out rate is the highest for the GBP-MS group and lowest for the GBP-FP group, while the situation is reversed in the 1996 year group. The finding regarding a higher retention rate over a longer period (as in the 1995 year group) corresponds with the conclusion regarding the whole GBP group mentioned in the previous paragraph.

9.3.3.4 The influence of year-level on student performance

The influence of year level on its own on the performance of both the GBP and mainstream students was significant for the 1995 year group, but not for the 1996 year group. It could not be indicated for the 1997 year group, because they had been at the

University for only one year. The interaction between year level and the programme followed had a significant influence on the performance of all students in the 1995 and 1996 year groups. The overall trend established for these groups was that there is an upswing in the performance of the mainstream students in year 2, and that they then perform better than the GBP students. Both mainstream and GBP students in all three year groups showed a decline in performance, compared to their matric results, during the first year. This is in line with the findings in the literature that it is a common phenomenon that the performance of all students declines during their first year, but that it usually recovers again (see 2.5.3.1).

9.3.3.5 The influence of enrolment in a specific faculty on student performance

It was not expected that faculty on its own would have a significant influence on student performance, However, since the FP offered in the various faculties would differ because of the nature and content of different disciplines, it was expected that the interaction between faculty and other factors would affect student performance. Because the number of students following different programmes in each faculty programme declined with each year level, it was difficult to establish the interaction of faculty with year level and programme. When the GBP-FP group and GBP-MS group was treated as one group, the influence of the interaction between faculty, year level and programme was found to be significant for the 1996 year group. Faculty as a factor should be investigated further, because in both the qualitative investigation and the literature review it was found that faculty had an influence on academic performance. The direct or indirect influence of students' choice of course major on degree completion was confirmed by several researchers (Pascarella & Terenzini 1991:398).

9.3.3.6 Comparison of matric results and other performance scores

Students gain access to the University based on their performance during the final school examination. If these matric results are reliable measures of their ability, they can be used as a guide to advise and channel the students into appropriate courses within their reach. For this reason it was necessary to compare the GBP students' matric results with their performance during the GBP. At present the students' performance during the GBP serves as a guide for appropriate channelling.

There was a difference in the mean performance scores of GBP students of all three year groups in their matric examinations and on the GBP pre- and post-tests, across faculties. The performance scores used in this comparison were an average calculated from students' Mathematics, Afrikaans and English results during each of the three assessment events. The Eng and M&D students in all relevant year groups performed better on the GBP post-test than during the final matric examination, while the Nat and E&M students' performance results on the post-test was lower than their matric results for the 1995 and 1996 year groups and better for the 1997 year group. No correlation between either the GBP pre- or post-test and student performance during later study years could be found.

These findings, which are based on the results of students' performance on three subjects, can be interpreted in relation to other comparisons in which students' performance in all matric subjects was used. These were findings from the frequency counts during the quantitative investigation in which there were vast differences between the students' matric results and their performance during later study years. From all these comparisons it can be concluded that neither of the three assessment events, namely matric, GBP pre- and post-test seemed to be reliable indicators of students' performance during their study years. This should be investigated further when more data is available.

9.3.3.7 Learning and development

In his explanation of potential ability Vygotsky, who based his developmental theory on the existence of a *zone of proximal development (ZPD)* (see 4.3.2.2), believed that what children can do with assistance is more indicative of their mental ability than what they can do on their own, without any assistance. He differentiates between a person's actual development level, that is, what the person has already achieved, and his/her potential development level. Vygotsky further states that by considering the maturing functions, the individual's future development can be predicted, provided that the same developmental conditions are maintained. This implies that, if a prediction regarding a learner's potential to succeed in the higher education environment is made under circumstances in which the learner is assisted on a regular basis, the prediction might

circumstances in which the learner is assisted on a regular basis, the prediction might not stay true once the assistance is withdrawn. If, however, the learner's actual development level has reached the stage of maturity which enables the successful performance of the cognitive tasks required in a higher education environment, the prediction will probably be valid. After the foundation programme there is very little formally organised further academic assistance. The students are left to cope on their own, and this is a problem for many of them.

The ideal is that by the time the formal assistance is withdrawn, students should have been developed by the mainstream system to be more self-directed and inter-dependent, but this does not happen. These students are in some cases even more dependent than their peers in the mainstream, and when the support is withdrawn, their performance deteriorates. This is also indicated by the results of the quantitative research.

It can be concluded that in this condition of withdrawn assistance, the indication of potential success during the GBP is proved wrong, as Vygotsky warned would happen. This indicates the inter-woven and complex nature of educational intervention and emphasises the need to integrate academic development activities with the mainstream courses continuously, throughout the students' study years until "maturity" is reached.

9.4 Implications of the research findings and recommendations

The study revealed information which has implications for ADP and for the University. This will be discussed and some recommendations will be made simultaneously.

9.4.1 Implications for academic development and recommendations

The perception of the students is that the four-week GBP has higher social than academic value, except for students with a very poor academic background. However, for this latter group the overload of new information diminishes the potential academic value of the programme. The social value should not be under-estimated, because it contributes to the students' integration into the system.

The foundation programme was experienced by many students as a repetition of their matric syllabus, especially for the better students. Once again the weaker, often African, students gained more from the programme. More differentiation within both the GBP and the FP is necessary. The development interventions designed for African students and those students who performed poorly during the final matric examination should attempt to provide knowledge and understanding of those basic concepts that should have been mastered at school. The interventions designed for the better students should be an introduction to the first year course. In other words, for the first group the focus should be the matric syllabus, and for the better prepared group the first year curriculum. The sequence of courses should be carefully structured, so that it gradually builds up to the first year.

Although group work already forms an integral part of the GBP, and is used in some of the additional courses during the FP, the practice of peer-learning should be emphasised more. The purpose should be to establish learning teams during the FP, so that students can continue to support one another academically and personally during their later study years.

Continued academic development interest should be considered during students' later study years. Less frequent - perhaps once a month - formally organised meetings with groups of students should be considered. The purpose of these group meetings should be two-fold, namely to encourage students enrolled for the same courses to support each other and to ensure the students of the interest of staff in their progress. Especially African students need this continued interest to sustain their feelings of belonging to the institution.

The selection of students who participate in both the GBP and FP should be done according to the design of each of these programmes. In other words, if the content of the programme is designed for very weak performers, only weaker students should take part in such a programme. If this is ignored, it leads to frustration and boredom as was reported by many of the better students during the qualitative investigation. It also has a negative effect on students' motivation and quality of effort if they experience no academic challenge during their first year.

However, if academic development initiatives aimed at improving students' independence and interdependence are not supported by the teaching and assessment practices of the University, these initiatives alone will not increase student persistence dramatically.

9.4.2 Implications for the University and recommendations

Many of the problems identified during the qualitative investigation regarding classroom practices, assessment and feedback could just as well have been experienced by white students. What needs to be considered is the responsibility of individual lecturers regarding their teaching and assessment practices, as well as possible ways in which the University can contribute to improve the situation.

An implication of the qualitative investigation for the University regarding classroom practices, is that students are exposed to an overload of lectures and summative assessment, often in the form of multiple choice questions. The fact that students reported that they thought it was necessary to understand the underlying principles, but found that was not what was required, gives reason for concern. It implies that the assessment practices of the University foster surface and rote learning, rather than understanding, deep learning and the development of higher order thinking skills.

Students also complained that there is very little feedback regarding their academic progress. In large classes neither the students nor the lecturers know whether learning problems are experienced at the input, elaboration or output phase (see 5.3.3.4). If more formative assessment, which utilises self- and peer-assessment, can be employed, both students and lecturers could benefit. Students will receive more feedback regarding their progress, while lecturers will be more aware of the level of understanding of the students.

During the qualitative investigation students indicated a need to be able to express themselves in ways that are culturally familiar to them. For this reason, as well as to create more opportunities for students to meet peers from their own cultural group in other year levels, the formation of clubs or associations for specific cultural groups

other year levels, the formation of clubs or associations for specific cultural groups should be encouraged. Students should also be assisted to establish and organise these clubs and associations. For example, a soccer club at the University would offer students the opportunity to express themselves, as well as developing a greater sense of belonging and commitment to the institution. This will also contribute to their social integration, and consequently improve student persistence.

Apart from scheduling tests and other out-of-class academic activities in a way that will accommodate commuter students, the establishment of learning centres on campus, where both residential and off-campus students can meet, would contribute to out-of-class learning. This would also solve the present problem regarding the organisation of out-of-class peer groups, namely that these groups have no place to meet where they can focus on and discuss academic assignments. This will contribute to both the formal and the informal learning environment.

Another situation in which the informal learning environment does not exist, and which contributes to student isolation, is created by the use of technology-driven methods of instruction (see 2.2). Although this was not the focus of the present study, the University's new distance education (DE) initiatives include the establishment of virtual classrooms. This implies greater access to more diverse students. If the planning of DE courses does not include formally organised peer contact and support for students who are enrolled for these courses, they might drop out of the system without obtaining a qualification. A possible solution is the use of learning teams or base groups. If students live near each other, base groups can be formed to provide the necessary academic and social support (see 5.2.3.2). Those students who do not live near other participants in the course, can be helped to form electronic base groups by means of net-meeting. These will then function on the principle of class base groups and can provide the peer contact and support that these students otherwise would have forfeited.

9.5 Limitations of the study and suggestions for future research

The limitations of the study were due mainly to three factors. Firstly, that there are not enough students from the same schools to enable the comparison of a large sample of

at the University for longer than two years. Thirdly, the unstable conditions in the suburbs prevented interviews with students who had already dropped out of the system. Consequently the factors that prevented persistence could not be explored fully. Further research should focus on these students who have left the University. Especially those students who left after their academic performance improved and then declined sharply, should be interviewed to establish the reasons for both the decline in academic performance and for the decision to leave the University.

There were indications that the channelling function of the GBP contributed to student retention. This should be investigated both qualitatively and quantitatively to establish the effectiveness of this function.

On-going research should be conducted to confirm the identified trends, and establish other trends in students' performance during their later study years. As student numbers grow, and it becomes possible to draw larger samples of subjects from the same schools and compare their academic performance, research should focus on more factors that influence academic achievement and persistence. These are the effect of culture and the home environment, financial support, the peer group, instructional methods, organisational culture and climate, and especially language issues. It is also necessary to investigate different forms of ADP intervention.

The prediction validity of matric results and other assessment scores, for example the GBP pre- and post-test, should be investigated further for access purposes.

9.6 Concluding remarks

The final conclusion of this study is that the GBP and FP as academic development initiatives of the University, alleviate some problems, but do not yet succeed in keeping most of the at-risk students in the system until they obtain a degree. However, it is not ADP alone that should solve this problem. Both students and the University should accept co-responsibility for student success.

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APPENDIX A

EXCERPTS FROM INTERVIEWS AND FOCUS GROUPS

In order to protect the students and to honour the promise of confidentiality, the information provided by the students is not presented per faculty or per interview, but in a mixed format. For greater clarity reference to the bridging programmes are replaced with the abbreviations GBP and FP respectively, although these terms were not used by the students. The students' language errors are not corrected. Where necessary, course titles and lecturers' names are replaced with [...]. All student names are replaced with *S* to indicate the student's reply. Questions and remarks by the interviewer are indicated by *I*.

There were five basic questions in the interview guide. These are indicated in bold font and all further discussions between the interviewer and the students that followed the specific question are presented after the question.

At the beginning of each interview students were told that the researcher is a doctoral student who is investigating the Bridging Programme at the University of Stellenbosch, and that the only way to establish the value of the programme was to get the *honest* opinions of the students who participated in the four week and/or year long bridging programmes. Students were assured of the confidentiality, but importance of their input, and were encouraged to be frank and honest when they reply to the questions. The following are excerpts form all interviews and focus group discussions.

1: How do you feel about being a student at the Unversity of Stellenbosch?

S: Well, I don't find it very bad, but the problem here is only the language, with me its the language, because when I came here, when we were filling in the forms, the application forms and everything , we had a...there was the promise that OK the course will be taught in English, so that there will be provision for English-speaking students as well, and that's why I sent in the forms and decided to come to Stellenbosch. But then , when I came here...I am not saying that the course is not taught in English, it is English, but it is only the subjects that we are taking at the faculty. For example, right now I'm' taking one subject with the faculty, so all my other subjects were in Afrikaans. So that 's the problem I have.

I: So what do you do about it?

S: Well, I went to talk to the dean of the faculty and I had tutors here and there, but then these tutors are also just other students, who were good at the subjects, I think, they don't go hand in hand with the lecturers, taking from the lecturer, so it was still difficult. Well at this time I think I'm getting used to the system, and of course there is some difficulty with this, and some lecturers prefer to be bilingual, and then you find that maybe about 40% or so of the lecture will be in English. It's not too bad, but then just imagine...the lecture hall and someone who did say some things in Afrikaans and then in English and then Afrikaans and then English, so you don't follow at all.

I: And the academic side apart from the language? How do you find that - is it very different from when you were at school?

S: Well, ja it's different. The difference is there, but its just that I find things difficult. I don't know whether maybe its my educational background.

S. It was difficult really at first. When we arrived, because its like- people know this is a historically white university, so they see you, they ask you this question: Why did you chose to come to Stellenbosch? It's like - you feel like you are being isolated. Now they want to know why did you come to Stellenbosch, and you feel like you don't belong here. Everytime you 're with the white people, they ask you this: "why did you choose to come to Stellenbosch? You know this is an Afrikaans. University, so don't come here and complain you can't understand Afrikaans.". For me, those words really, I did not like it, because that was difficult for me. But now we are coping. It's better now. Because we are used at all this kind of talk. You go to the library, they ask you, "are you from Kayamandi?". When they see a black person, a black person is from Kayamandi. They see a black skin, they see somebody who is doing Forestry. That's stereotype.

I: Did you experience anything similar?

S: Yes, actually I did. This whole big thing about why did I come here - because there are not many Coloured guys who actually come down all the way up from [...] just down here to study. Actually I had that problem quite a lot last year and right up with some now. Actually, I'm still battling to try to adjust to this whole situation.

I: What makes it difficult for you?

S: It's the whole - you seem to be isolated from everyone - everybody is Afrikaans. speaking - and then they tend to isolate all the English people, or all the people who aren't from like anywhere around here. This why you'll see, not many people from outside the Cape. The Cape people that always congregates, form groups, and the outsiders are left outside.

S: Ja, at first we came so blind, and we like mix with everyone. It was so nice. then. As time goes on it is a tendency that comes spontaneously, it seem just - draw back and back to cliques. Then cliques - they're cultural. Ja and only when you are in a clique then you have that sense of belonging.

S: Ja, with me its maybe, with social white groups - when people are drinking or when I go to [...] when I sit down there, those comments I do get and that's when you see a point when they tell you "why do you sit next to me - you black what what?". Then it is very hard to you - what do you do like that - quarreling with the person next to you. "Don't call me black what what what"... Then there are some pubs here where they don't allow a black man to come. There are those things.... so you start to select yourself. You end up going to Kayamandi. That is where we at least can feel at home.

S: Another thing is, when you ask for question papers from previous students who are white, most of them refuse, unless you are very close to them.

I: Do you get anything like that at the University?

S This thing you get it everywhere. Like with us, we had to get some course outside the faculty. You go there, the lecture speaks Afrikaans. You go to the lecturer afterwards and say I did not understand this, because I'm not Afrikaans. speaking. "You know the policy of this university. It is an Afrikaans. university, I'm not going to change."

S: Even from the lecturers you get that thing- they tell you why did you come here. first of all you know this is an Afrikaans university. You should have gone to -
they tell you there are many places, and they tell you this district is to Afrikaans speaking students

I: Did you come across something like that?

S: Now the language issue is quite a problem. I'm glad that you find some specific lecturers who, by nature they are very positive towards people and they understand. But, I'll tell you some of the courses they ... you ask one question now, the lecturer will answer you, but now he starts to realise that you are a person who needs to get the information in English. Whenever he talks, he'll ask you whether you understand. See then you don't feel that spirit there. Then even when you go to the lecture, you ask questions, that atmosphere is not a welcome atmosphere, you know. But I should say there are specific people who are so warm when you go to them. But then some ... if you can ask me will I be happy to go into an Afrikaans. and the lecturer will help me, I'll say no, I won't be comfortable.

I: You said you are still surviving. What is contributing to that, or are you just hanging in there, no matter what?

S: Ja...I think because of the Because of the nature of the course, where they offer the course in English. Here the classes are small, the lecturers they know the individual students problems.

I: Did you have the same experience?

S: I can't really say that I'm surviving out here. I have considered leaving, actually I'm considering it very strongly. Just finishing this year and then leave.

I: Continue somewhere else, or stop studying completely?

S: Somewhere else, yes leaving. Not actually leaving the course. I'd like to continue somewhere else, that is not here.

I: Is it the distance from home?

S: That also plays a role but not so much as me trying to adapt to this whole thing, if you know what I mean. It is one thing if you were accepted into the society, and things like that. Now you get alienated from everything, and it really just puts a whole lot of stress on you and is closing your mind up.

I: Do you think if you were in a residence that it would have been any different?

S: I don't think so. In a residence you just tend to group with the internationals.

S: No, I experienced my group level in my first year when I stayed in Goldfields. - Goldfields used to be a non-white residence. So when we arrived here they took us there. And I'm telling you what I mixed with there is a trauma, because it was like I was getting nothing there. I would leave, I would go to classes, when I come back I would find a note on my door "hou op rondloop jou bobbejaan." All this sort of things. So. I was a bobbejaan, to Coloureds, not to whites. By that time it was only Coloureds, but I called them blacks, I don't like this thing of Coloureds, but they call themselves Coloureds. So those are the people who are discriminating against the blacks, who were actually the best to go with at Goldfields. That's when I experienced my group level, but we showed them we don't like what they're doing.

S: The feeling of belonging is very important for the students. You know you get homesick, two months before you go, because you don't have friends - you just have three or two. We are very few here, and that's another anger which are facing students. Like I for one, if I'm at home, I never think of Stellenbosch. That

seems to me that one day I wish I can finish and go out of this place, you know. So, when you are a student, this is of the best years of your life. And you want to enjoy it. Stellenbosch doesn't give us that chance.

I: Hoe was dit vir jou op Stellenbosch in die algemeen.

S: Die moet ek sê in my 3 jaar daar het ek nooit enige rassisme ervaar nie, maar sommige van my vriende het dit wel ervaar. Meestal maar as hulle na hierdie pubs toe gaan en so. Jy weet net die mense se houding binne in die pub. Maar op kampus - ek dink almal was 'n bietjies te bang om op mekaar se tone te trap... die verskillende rasse. So ek dink almal was maar 'n bietjie versigtig.

I: Het jy in die klas vriende gemaak met iemand wat nie in jou eie groep was nie?

S: Ja...nogal, maar dit was maar meestal, haai hoe gaan dit met jou...maar nie kom ons gaan saam uit moraand of so nie, nee...

I: Ook nie met meisiesvriende nie?

S: Nee, ek het nie eintlik baie aan sosiale dinge deelgeneem op Stellenbosch nie.

I: omdat jy ver gebly het?

S: Nee dit was nie eintlik die rede nie. Baie van die goed het ons as Kleurlinge gedink is boererig. Dis die witmense wat dit doen, ons doen dit nie. Ons kan dit doen, ons kan daar ingaan , maar dis nie ons kultuur nie. Ek meen, ons gaan nie na hierdie dans sokkiejol goed, ons doen ook nie daai nie. Die goed wat hulle gedoen het is baie gebaseer net op soos wat die witmense doen.

I: Oor die algemeen hoe is dit op die kampus?

S: Partymaal was vir my baie maklik om vriende te maak, partymaal baie moeilik.

I: Wanneer was dit vir jou moeilik?

S: Ek weet nie, wel soort van jy is nog te vreemd hierso en dan sal jy praat en almal sal met jou praat, maar dan is dit net soort van ek kan dit seker maar nou racism noem. Ek bedoel as jy in 'n klas is sal jy altyd sien en jy sit nou by 'n bank sal niemand by jou inskuif nie – dis nou hoe dit werk – daar sal 'n klomp Kleurlinge by een bank sit, en daar sal niemand kom sit langs jou nie – niemand – niemand van die anderskleuriges nie – ja niemand van die blanke mense sal daar kom sit nie en as hulle sit – sit hulle omtrent so 'n bank van jou af weg, en ek bedoel dit is bietjie erg. Ek bedoel baie keer sit al die Kleurlinge bymekaar en ek dink dit is nie reg nie. Dis goed, maar ons ken **net** mekaar, verstaan? Want ek onthou verlede jaar - toe was ons in die middel van die bank, toe gaan sit ons daar omtrent voor, maar in die 3de bank, dan gaan sit ons daar en nou kom sit iemand, maar dan kyk hy vir ons aan en dan gaan sit hy agter. Ek dink dis nogal erg vir my. Maar ek weet nie, almal doen nie dieselfde nie, maar dis wat ek ervaar het in my eerste semester – ek wil net dit genoem het.

S: Hier op die kampus, ja daar is goed nie reg op kampus nie. Sommige persone se gesindheid is nie reg nie, maar jy moet verby dit leef.

S: Ja dit is so.

S: Dis al hoe ek dit sien.

S: Ja –dit word beter in die tweede semester – die eerste semester was vir my erg.

S: Ek voel mens moet eers dink aan jou...wat jou doel is hierso. Dis om jou graad te kry. Die ander dinge is maar net bykomstighede – seker maar swot eerste en dan oor die ander dinge worry.

S: Maar dis lekker om vriende ook altyd te hê.

I: Het jy vrymoedigheid om die dosent iets te vra?
S: Ja – om vir haar iets te vra – sy gaan – jy gaan naderhand op 'n argument uitloop, ek wil maar liewer nie daarop ingaan nie.
I: En dan raak dit onaangenaam of wat?
S: Nee nie eintlik nie, dis net meer – sy sit jou af op 'n baie mooi manier.
S: Ja – baie. Op die ou end voel jy, jy is so dom, jy gaan maar liewers nie weer vra nie.
I: En vriende help nie in die verband nie?
S: Ja hulle verstaan ook nie so hulle kan nie vir jou
S: Ja ek stem saam so hulle kan jou nie veel help nie.

S: The lecturers– I don't know – I think some of them are a bit too qualified to teach. I found that the professor can't really lecture - not all of them but I mean the vast majority because their way of thinking is – its way up there and they can't come to our level. What they do is they give you all this information that you don't really have to know and they explain in a way – they explain in a way that you know they assume you know the things, that's what I find whereas the ordinary lecturer with no professor or no doctor like he is able to speak more like on your level you know.
S: Its different yes, so I think maybe they should get like teachers – teachers who should have a teaching diploma or something – they do a teaching – or just a little course just to probably strengthen them a bit with some skills with that – in that line.
S: Ek dink daai is 'n groot probleem hierso – want daar is baie – hier is baie professors wat nie kan klas gee nie.
S: I am not questioning their ability and the subject knowledge, but you know like 40 minutes can seem like one and a half hours when a guy talks and you know that guy can't teach because he just goes on in the monotonous voice – on and on and on and on. And you sitting there...
I: Voel julle vry om vrae te vra, would you stop them and ask a question?
S: Some of them get quite arrogant if you ask them a question.
S: But we know they think they know everything and when you ask them something to them it may seem stupid, or it feels like just mentioning it now, how can you ask me again – so they get sometimes very agitated.
I: And then?
S: They would go – maar jy kan mos sien seun dis op die bord ek meen – specially this one lecturer here, he is like that.
S: I mean this one – the one case he draw an arrow on the board and all this guy asked him was – must the arrow be in that direction – and he explained to the guy for a whole half an hour and you like really hammering on this guy on why he doesn't have to know in which direction the arrow must be. But I mean he did it in such a way that the guy wouldn't ask a question again.
I: Oh! And would you feel free sort of to go to them afterwards?
S: Ek sal enige dosent na die tyd iets vra.
I: Enige dosent?
S: Ja. I think maybe one of the reasons why they get irritated in class is because they have a certain amount of work to get through – and if you ask questions you

know - you know or some of them maybe – some of them memorise their lectures and then now if you do disturb them then they just like forget everything.
S: I think – I just want to speak about the non-whites. I think there should be more interaction. We are like the minority and – well what I often find is sometimes the minority they like stick together you know – you get for example if you go into Neelsie for instance and you'll see all the coloured students sitting on the one side of the Neelsie and all the whites sitting on the other side.
I: On the other side.
S: Ja, maybe not because its like racial [indistinct] or whatever, just because you don't know the other students. So you have like at the first four weeks where you know you get and they are mostly Coloured Now you get to varsity and you just stick with this friends you don't like still mix with others.

S: Ek voel dit lyk so of hulle 'n punt maak dat hulle meeste Kleurlinge in een koshuis sit en dan die anderskleuriges – al die wittes op 'n ander koshuis en miskien nou net so twee of drie wat daar is –nou anderskleurige

S: Maar die een – een probleem wat ek ondervind het, veral ons brugkursus en die studente, ons het nie met die die universiteit se koshuise en daai tipe ding wat hulle het ingeskakel nie. Daar is mos 'n week oriëntasie.

I: Het julle dit gemis?

S: Ons het nie deelgeneem daaraan nie, ek weet nie hoekom nie, ons het nie saam met daai mense ge-start nie en ons het nie verder aan kon deelgeneem het aan hulle aktiwiteite en so aan nie. So ons was heel uit gewees.

I: How do you experience campus life?

S: Well it depends where you live. In Stellenbosch itself that main campus is still a bit on the – on the old mix and ... whereas over here I think they have adjusted to the times whereas initially we were there, when I got the idea, I felt like you can't – they are not really approachable as such I mean you – there is some distance here - look we don't want things to happen overnight but I mean you have to also try to adjust whereas I think at the moment over here we've kind of reached that stage where it – whereas over there I don't think so.

S: Ja ek dink net, soos toe ek in die koshuis gebly het op Stellenbosch – ek bly hier op die koshuis, en eerste jaar koshuis dit is maar om op die koshuis daar in te kom – en dit is nou plain gesê – om kleurling te wees op die koshuis is nie maklik nie – is nie sommer jy moet regtig jouself – wel jy moet jouself bewys om aanvaar te word daar.

S: Ja dit is – kyk ek kan verstaan dat baie van die meisies daar is die eerste keer wat hulle anderskleuriges raakloop so nou moet hulle saam met hulle bly en ...soos ek weet nie hoe – ek weet nie of julle ook so dink nie maar 'n meisiekoshuis is maar 'n bietjie...

S: Nee ek stem saam.

S: Bietjie – bietjie soos ek kyk soos ek het in my – die tweede jaar van die eerste jaar het ek genoeg meriete gehad om 'n enkel kamer te kry, maar toe kom daar 'n nuwe meisietjie in, ook 'n kleurling meisie en hulle wil toe nie vir haar met 'n blanke meisie in sit nie, en ek wat die meriete het om 'n enkel kamer te kry moes in – saam met haar in.

S: Ja dit is nogal – kyk daar is nou die meisies wat – ag hulle is heel okay met jou en alles, maar dan is daar ook daai...

I: En wat sê julle twee manne wat in die koshuis was, hoe was dit?

S: Ja sommige ouens leef nog baie in die verlede en so – of nou sal ons miskien verbystap en hulle – hulle sien nie dat 'n mens agter hulle staan of so nie, dan sal hulle dit nou sê soos hulle bedoel en dan sal hulle nou sien 'n mens is hierso en – ja en so...En so kan jy sien dit was vir hulle... en hulle het – hulle het eintlik te hard probeer om vir jou te laat eintlik te laat welkom voel en so aan.

I: Do you have any suggestions?

S: Maybe they should also start having a test week like – not maybe a week but like we have a test week.

S: Test days ja.

S: Ja like where they set out okay this day and this day and then set it so that they, and we usually have classes at Stellenbosch the day that we write the test. And then what happens is nobody attends those classes because they felt they just have to study.

2: What was your impression of the four week Bridging programme? Did it mean anything to you?

S: Ja, well, it sure have been of use, but the problem with me is that I came knowing nothing. So it was too much for me at once. But I can say it was useful, because I see a lot of other students who found it interesting, but for me it was all a lot of work at once, and I couldn't grab anything. Ja, maybe I got something, but not much, because there was too much for me to learn at once, and I had to take time I just did not know anything

I: And if you think about that, do you have any suggestions how they can make it better still - to help more?

S: Well, I don't know what to say about the improvement there. What I realise there, even to those who had the mathematics I think they...there's too much to learn at once. I think they try to

touch each and every topic and that's just too much. I don't' know whether they should cut down on the work or maybe they should increase the time, I don' t know.

I: Can we get back to the question about the bridging programme. Did the bridging programme help you at all? and tell me more about how it helped you.

S: Well, it helped in a way, because you tend to - when you've done matric, you tend to forget all the work. When you come back, it's just everything is new.

S: I think that it really helped, especially some of the things that we did. Like Maths and things like that. and study skills, that really helped us a lot, I think, for I'm still using those, some of those things that we learned., right now.

S: Yes it did work for me, because I remember when I first came there I thought I was not university material, I thought it was not going to work, I wanted to go home. But Dr [...] he said you are not going anywhere. I said I'm leaving I'm going home. He said no. And today , believe me, it did a lot of things for me, because of my experience. I know all the work, all the difficulties. For when you come from what they call a disadvantaged community to a university like this one, you think that "no, I'm not going to be able to make it".

S: It's one of the experiences of this university that I genuinely enjoyed. I should say that I feel the friends that I've met, most of my friends from the Coloured community, most of them I've met from the Bridging programme. And we are still very good friends,

S: The standard was very high on the programme.

I: When you say the standard was very high - to what do you compare it, your normal course?

S: No, I know some institutes, like the University of [...] I was there. There it varies because the financing and all that. But then when I think of the GBP there's nothing that I can say there, that I can add. Everything was very good.

I: Was daar iets in die brugprogram waarby jy gebaat het?

S: Ek was nogal skamerig. Ek het nogal baie geleer om te praat en te kommunikeer, want ons klasse gehad waar jy moes drame doen en sulke goed. So ek was verskriklik skaam. Ek het nogal baie geleer om te praat.

I: Het dit jou gehelp in jou kursus?

S: Ja, ja - in die tutklasse - jy moet praat in daardie tutklasse. Die brugprogram het my einlik baie gehelp. In die begin het ek gedink , on nee hulle is besig om my intelligennsie **weer eens** te onderskat, want hoekom moet ek nou op hierdie brugprogram wees. Maar toe ek nou daar gewees het, het ek gedink, nee wat, dit was definitief die moeite werd gewees.

I: Hoe het jy in totaal die brugprogram ervaar - het dit vir jou iets beteken?

S: Vir my het die brugprogram persoonlik baie geleer, want 'n mens is as jy van die skool af kom is jy senuweeagtig vir die werk wat kom en dan is dit goed om in groepe te werk. Die tye is 'n bietjie onrealisties, want niemand kan vir 2 ure lank konsentreer nie. Die basiese komponent van ons program het uit wiskunde bestaan. In die Afrikaanse klas het 'n mens in groepe gewerk, maar nie so baie nie en in die rekenaarvaardigheid daar het 'n mens nou jou eie rekenaar gehad en die Engels... Die basiese groepwerk het eintlik te maak met wisk.

I: As jy nou sê dit was anders op skool, hoe was dit op skool?

S: Daar op skool as ek nou oggende in 'n wisk klas kom, meneer het vir jou 'n resep geleer. Ek bedoel hierso kom hulle en vra jou wat dink jy van dit - kan dit miskien so wees - hulle het die ding krities bekyk

S: Ja eintlik, ek het 'n baie groot vriendekring oor die brugprogram wat ek bygewoon het. Ek bedoel jy was in 'n groep, in groepe ingedeel en van daai groep het almal wiskunde saamgekry en dan is daar weer in sub-groepe ingedeel. Ek dink ons was een van die mees suksesvolste groepe. Want ons is nog sover soos wat ek nou gesien het die meeste nog hier.

I: But if you – if you think about the four weeks, that begin of the four weeks, was that of any value or not? I mean you can be completely honest about that.

S: To me it was more of getting to know like what is going on at University. You know getting a bond so when I got like the first day I was, I knew – I knew some things but it wasn't something strange to me, in that sense, but academically I think that it is a waste of time because basically we were doing matric math's

I: Kom ons praat net 'n bietjie oor hierdie vier weke, hoe was dit vir jou oor die algemeen?
S: Dit was maar – maar matriek wiskunde gewees en dit hang af van die skool waar jy was.
I: En vir jou persoonlik?
S: Ek het nie eintlik baie goed nuut geleer nie, want dit is in elk geval 'n herhaling van matriekwerk.

3: What was your impression of the year long foundation programme? Did it mean anything to you?

I: Now the year after the bridging programme, when you still had the small groups, how was that in general
S: Ja. I find it useful, because if you can go through the introductory programme, then by the time you reach the main course, I think it will be easy. Of course I am no longer doing such things, but although I find physics very difficult to grab, but I think, that could have helped me. I managed to pass my chemistry, but then I don't need it this year, but I'm sure it could have helped me, because when I went there I knew very little. Let me say, nothing, but then I could catch up because then I had these other extra lessons. You have an introduction, so I think that one is useful but, the problem with the bridging programme what I found difficult was that, I don't know, maybe it's my English which is deceiving me.
S: I just see it. When we were doing this FP. I could see that some people were just ***ahead*** of us

I: Do you have any suggestions for the programme?
S: Yes I think there must be a follow up
S: I think I must agree with him. It is no use just having the students on the FP and seeing them through the first year and then forget about them, and say now, they can get through on their own. I think the FP should actually end when they see the students get their degrees, and leave the university. It serves it purpose, but after a while they seem to forget the whole aim behind the FP, to get the students through the university. Once you get though your first year, they take it now you can get through university on your own. And that's when the problems actually start.
S: Maybe you think we expect the intensity to be the same as in the first year, you know. Maybe like meeting once every 2 weeks - like shuffling the people's problems. The students do those problems, so that you can start to have the feeling of how's it going compared with other students. Because a lot of students leave this place, some they change streams, some sit with confusion.

I: What about the foundation programme during the first year? How did you experience that?
S: They were quite good, because, we worked in groups. We had a lecturer, and in the group, we had our lecturer. So it was that in Mathematics, I had two lecturers. I had one lecturer for the mainstream, and I had one lecturer for the bridging course. It was quite nice.

I: Het jy enige aanbevelings ten opsigte van die basisprogram?
S: Die dosente moet nie alles wat in die klas gebeur het herhaal in die hulpkursus nie - dit word vervelig en mors tyd. Identifiseer liewers die studente se probleme en bespreek dit. [...], die vak was byvoorbeeld baie goed en sinvol. Die dosent het probleme hanteer, gevra waarmee studente nog probleme het en dit dan behandel. [...]was 'n mors van tyd - blote herhaling van lesings. dosente kan liewers voor 'n toets voorbeelde van vraestelle saam met die studente uitwerk.
I: Wat was jou ervaring van die groepwerk in die basisprogram
S: Aanvanklik baie produktief, later vervelig. Daar is te min variasie in die prosedure- studente raak verveeld en woon dit nie meer by nie. Hulle moet liewers die proses afwissel, dan sal die studente dit ook beter bywoon.

I: Kom ons gesels 'n bietjie oor die basisprogram. Het daar iets gebeur daar wat vir julle iets beteken het?
S: Die eerste jaar was baie - baie tough.
I: Is dit? – hoekom was dit vir jou tough?
S: Want ons het soort van verskillende klasse gehad, jy het een klas by die dosent en 'n ander klas, sê nou maar die hulpklas en ek het totaal en al deurmekaar geraak en die een dosent sê dit en die ander dosent sê dat en soort van – jy kan nie twee dosente dieselfde soort van die ding leer nie, as die een dosent die metode gebruik en die ander gebruik daai metode, watter een dink jy nou moet jy nou doen verstaan.
S: Ek dink dit is 'n groot aanpassing as 'n mens nou van wat jy op skool gedoen het .

S: Die hoeveelheid werk is – is veel meer en die manier hoe die klas gegee word en okay maar ons het nou omdat ons die vyf jaar plan het, het ons nog ekstra klasse gehad nou van sekere vakke daar. Dit het nogal 'n bietjie gehelp ook, maar eintlik was dit ook – dit het baie van 'n mens se tyd geneem. Sommige tyd dan voel jy dis onnodig miskien soos [...] 'n vak soos daai wat ons nou gedoen het, en dan moet ons dit nou weer – ons moet dit weer in ons vierde jaar gaan oordoen en ons het dit nou gedoen al.

I: Hoe – hoe het jy gevoel oor daardie jaar?

S: Baie tydrowend die eerste jaar, oor jy niks kredietdraende vakke doen nie.

S: Ja en dan die fisika en chemie, is baie soos wat ons op skool geleer en ek meen daar het niks bygekom vir Model C nie. Ek meen, as ons skool nie 'n lack het wanneer dit kom by die eksperimente nie, want sommige apparate het ons nie, maar die werk is omtrent dieselfde dis net hier en daar wat daar 'n bietjie bygekom het maar.

I: Dink jy hulle moet dit op 'n ander manier doen? Sê nou maar jy was in beheer van daai eerste jaar - die FP – wat sal jy doen?

S: Wel, kyk na die fisika wat ons **moet** doen en dan daarmee help – nie met die skool fisika – ons het dit klaar gedoen.

S: Ek dink ook so.

S: Ja want ons sukkel met fisika.

S: Hulle het mos nou soos inleidende wiskunde en alles wat jy nou op skool gedoen het, het hulle mos nou in daai eerste vier weke nou...nou ek dink nie dis nodig dat ons dit nou in die jaar moet weer moet doen nie, ons moet liewer meer konsentreer op die werk wat ons miskien volgende jaar sal doen, miskien inleidende oor daai werk daar.

S: Ja, wat ons in die tweede jaar sou doen. – ek dink ook so.

S: Maar ek dink – ek dink daar was – as dit die geval was sou daar genoeg tyd gewees het, want ek bedoel die vak tel nie – dit tel nie eintlik krediete nie, so as 'n mens nou nie verstaan nie, dit sou genoeg tyd gewees het. En dis lekker want dit is in 'n klein groepie en jy kan persoonlik met 'n dosent ook praat en jy is meer gemakliker in daai – in die klas in.

S: Sodat hulle kan aanpas na die inleiding tot ingenieurs fisika –sal beter werk.

S: Ja. Ek voel jy mors jou tyd vir die jaar.

I: Jy wou nog iets gesê het?

S: Nee ek wil gesê het in daai fisika wat ons die eerste jaar gekry het nè, ek het gevind as hulle daai – daai inleiding veral daai werk vir ons baie makliker kan maak en ons kan sê wat eintlik gaan kom in daai fisika sal baie-baie help, want ek bedoel party mense verstaan nie die basiese goed nie, want hulle spin baie fisika en hulle verduidelik baie vinnig en as jy nie kan byhou nie is dit jou probleem.

S: Ja en die pas is vinnig.

S: Ek dink nie 'n mens moet dit eintlik makliker maak nie, want die universiteit het tog 'n standaard wat hulle volg maar ek voel maar net dat ons moet maar net inleiding kry oor die werk wat ons gaan doen, nie die werk wat ons alreeds gedoen het nie, wat ons moet ken nie. Okay dis 'n agterstand, maar dit is wat ons moet oorbrug maar ek voel nie ons moet meer daarop konsentreer nie, want in die eerste maand het hulle die geleentheid gehad om nou reeds daarop te konsentreer.

S: Ja en nou moet ons konsentreer op iets anders. Die pas vir fisika is so vinnig as hulle net die basiese konsepte vir ons kan gee van fisika, dan sal dit baie makliker wees. En chemie is maklik so hulle hoef nie eers chemie deur te gaan nie.

I: Vind julle almal die chemie maklik of is dit nou maar net sy?

S: Ja 'n maand is genoeg om al die skool-goeters uit te sorteer.

S: Ja., dan kan jy begin met universiteit se aanbiedinge.

S: Maar ek dink dis die verskil tussen die universiteit en skool – want hulle wil vir ons leer om op ons eie te werk jy weet dis wat hulle probeer om te doen. En hulle leer ons om ononafhanklik te wees hier, maar jy moet self besluit of jy nou wil of nie. As jy 'n probleem het – eers gaan werk by die huis en dan kom jy met die probleem en sien of dit reg is.

S: Dit sal – dit sal nogals baie helpvol wees as hulle rekenaarprogrammering kan gee, want ons het nie dit nie in die AOP eerste jaar nie. As hulle so 'n vak in die tweede semester **en** eerste semester kan aanbied.

S: Maar nie die rekenaarvaardigheid of -geletterdheid nie, maar programmering.

I: Programmering?

S: Ja, want ons sukkel.

I: Het julle dit wel van die tweede semester af? Of wanneer begin julle daarmee?
S: In die AOP jaar– die tweede jaar – tweede jaar – tweede semester – so dis die ander ingenieurstudente se tweede jaar, eerste semester.
S: So dit sal lekker wees as dit in die basisprogram, in die eerste jaar kan wees. Ons wil nie weet hoe 'n rekenaar werk nie, ons sal wil programmeer.
S: O ja op die rekenaar – maar om die waarheid te sê dis dis nie te moeilik nie.
S: Ek bedoel ek sukkel.
S: Ja maar julle het mos werk labs.
S: Want ons het gesê ons het nie rekenaarvakke op skool nie. En enige ander student wat van 'n Model C skool af kom as hy nie rekenaar as vak het nie dan kom hy hier en dan sukkel hy.
S: Ek bedoel ons is op die AOP program, so as ons in die vyf jaar plan is – dan is die minste dat ons voordeel trek

I: And the FP - how did you experience that?
S: To be quite honest with you, we only had four subject for the whole year compared to the others who had about you know twelve. But what I found very frustrating was some subjects like chemistry you not going to do in like the following year, and we had to do this subjects you know and I felt that maybe they could have given us maybe more exposure to the second year work.
S: Ja – ja ek dink dis baie simpel basies op daai brugkursus veral die eerste jaar.
S: Jy kan maar net so goed jou vier jaar klaarmaak en dan sal jy baie meer leer en sê maar jy het nou miskien die eerste jaar gedoen en jy is in 'n vier jaar plan en jy het miskien 'n paar vakke nie deurgekom nie, maar dan weet jy darem wat in daai vakke aangaan en die volgende jaar sê maar jy doen dit oor en jy kry kans om dit te herhaal, dan – dan sal jy baie beter doen in daai vakke wat jy – wat jy alreeds gedoen het. So ek dink dis eintlik baie beter om die vier jaar plan te volg as die brugkursus, ek dink 'n mens leer tyd mors want daar is baie vakke wat onnodig was. Soos hy nou sê dis nog 'n paar en dis die tipe werk wat ons al klaar matriek ook al gedoen het.

S: I think the academic side the program needs something too. I think they have to – you know more inter action with students. At the moment it is like the lecturers who set up the subjects you know – the dean who assumes – who takes the subjects and make it easy for the students or something like that. They don't actually sit down with the students and ask the students look here what is your experience – I mean like you doing now, what is your – what is the experience, where do you think we could make changes - something like that. Last year they had something –ja it worked quite well last year because for the first time we were actually able to talk to them and communicate look here this is the problems we having. But I mean at – this year I feel its like very separate and the staff is over here and we over here and they just assuming what the problems are that we are experiencing, there is no inter action.
I: Yes. Voel jy dieselfde of anders?
S: Oor die brugkursus nogal nie so baie positief nie. Veral die eerste drie jaar doen jy mos nou eerste twee jaar en in daai drie jaar weet jy eintlik nie waar jy staan nie. Jy is eerste jaar – tweede jaar – meeste van die tyd eerste jaar – tweede jaar histories en as iemand vir jou vra is jy – wat is – is jy nou tweede jaar of eerste jaar dan moet jy nou maar seker maar nou sê jy is derde jaar – derde jaar op die kampus. Maar jy is eintlik 'n tweede jaar nou jy voel somtyds hulle dink dat jy nou weer gedop het.
S: Ja jy voel somtyds baie – voel af – veral minderwaardig en meeste van die tyd so ek voel net eintlik vir my sal dit nog beter gewees het ek voel ek sal beter die vier jaar wou doen vir 'n kursus.

I: Is julle in die gewone hoofstroom of doen julle die langer kursus?
S: Ons doen die lang kursus, die eerste jaar is net verleng.
S: I just feel that if you are on the ADP program it's good then but when you come to second year like we are now, you feel more pressurised than what the other students would actually feel.

S: And also with the second semester you only have one subject, and when you come to the second part of your first year then you sit with more subjects. And I don't see why the can't divide it more equally.
I: Okay, so anybody else that has got another opinion or wants to add to that?
S: Nog 'n ding is ek voel net hulle kan meer – meer doen in die eerste twee jaar vir ons, want ons is daar in die brugprogramme al wat ons doen is ons gaan klas toe en daar is nie ekstra tutoriale regtig nie, dit is nou net as ons dit aanvra dan is dit beskikbaar vir ons.

S: En 'n voorbereiding kursus het ook niks waarde eintlik vir ons nie.
S: Ja die voorbereiding soos fisika en goeters, dis alles goed wat jy op matriek reeds doen. Hulle kan soos 'n inleiding vir die eerste jaar fisika gee miskien – iets meer gerig op eerstejaar vakke.
S: As om weer jou matriek vakke oor te doen. Dis simpel ek bedoel ons almal het matriek geslaag.
I: Hoe voel julle ander oor die program?
S: Well look unless you did not do chemistry and physics in - at high school and especially matric , then it would benefit you. But for us that didn't help us at all.
S: So what I suggest - why don't they move that to the first year and do all your biology subjects in the second year, because by the time you get to second year, then all that knowledge of Osteology and what they do on parasites all those things are lost. I mean if you - you will remember it but it's not.fresh in your mind.
I: Which other subjects did you do extra?
S: Chemistry
I: En hoe was dit?
S: Nee dit was maar – dit was maar weer matriekvlak en dit was...
S: Dit was actually standerd 8 werk
I: Is dit?
S: Ja hulle - soos hulle sal vir jou vra – wat is die naam van die element CU?
S: Ja en dis goed wat ons in elke geval klaar weet van standerd 8 werk
I: If you have suggestions...
S: Ja maar hoekom – hoekom ons eintlik sukkel as ons hiernatoe kom is net die – die werklading is baie – baie meer.
S: En as hulle net in daai eerste twee jare net so - veral in die tweede jaar van jou eerste jaar as hulle net meer vakke of relevante vakke daarin kan druk wat meer – wat ons meer aan die gang gaan hou, sal dit beter wees.
S: Ja we had a bit of group work in stats –biostats - there was people that came in.
S: Yes they were – it was the students that actually helped us.
S: That was also optional, you had to ask – it wasn't proposed to you – you had to go and ask.
I: So if you wanted to, you could attend. Did some of you attend that? What is your perception of that.
S: Ja if it wasn't for that I – I don't think any of us would have passed.
I: And what did the student actually do there, that helped you?
S: She basically she – sy het die klasse vir ons aangebied.
S: Maar op ons vlak.
S: On our level and ,
S: Ja maar dit was baie interessant - nie daar bo dat ons niks weet wat aangaan nie.

S: Not in a way that I am too scared to ask because you weren't like to scared to ask a stupid question.
S: Ja like in a small group like this you can ask anything.
S: But in a big class its difficult well...
S: The [...] was the worst – you sit in class...
S: You sit in class and then this guy goes on and he writes and he is talking and he is talking and then every time you ask questions, but then he answers his own question and you like too scared to put up your hand and say – or ask him you know – how – how can that be like you're too scared.
S: And especially that – why I feel it was difficult in the first year was because being English speaking and like in a class like [...] it was so hard to actually sit there and grasp what was happening – it was terrible.
S: It was very hard to get the Afrikaans up till now when its really hard for us to – besides having the work to do that like maybe Afrikaans people – speaking people have to do - I have to first translate my notes and that takes up at least like half my time and then go on and study them – its really hard to do it that way.
I: So would you put up your hand and say, can you please repeat it? - if you don't understand the language?
S: Yes – yes I guess I would if I – but most times the lecturers just go on with their lecture and you don't really feel you want to – like that – "excuse me what is that word that you just used there".
I: But you people must do that.

S: They tell you – you know they're open to any question and that, but its different if you sit in class, like 200 people around you and you know if you put up your hand for a stupid question...
S: I don't suppose you can change that, because Stellenbosch is known for its Afrikaans I mean – its better – I think its ...
S: If they have an English speaking lecturer they surely lecture in English.

4. If you think about the time you put into your studies, do you feel you get the results that you expect?

S: Well, in some cases I get what I expect, but most of the time I think I work too much and I get little. It all depends ... you understand ... I work so much and I just get this little...
I: And do you ever talk to someone about that? Did you ever after a test asked a lecturer why didn't' you get more? - not aggressive, just asking where did you go wrong?
S: Ja, but I haven't done that at all.
I: Why not?
S: I can only ask if I look at my test paper, if they give my test paper, if I look at a certain mark, maybe I look at my answer and I think this score is too high, then I may go to the lecture and the lecturer will be able to say, "no, this belongs so". Otherwise if I just get a few marks, I don't talk to the lecturer and ask how I got this.
S: Sometimes I ask ... for example there was a time when I was writing [...]. This [...] it seems to me it is just something that I have to know the general principles and so on and then the questions were multiple choice and then I just found it difficult to study all the detail for multiple choice questions. I wasn't so sure, so I saw I had to talk to the lecturer, actually it really also made a difference. I had to talk a little of what is expected of me, what, how should I really... because I thought I understand it when I know the general principle, but then, I did not know exactly what was expected of me. But then after that I think I really improved. I know how to work out such things.
S: But then there are things that I just don't understand ... what do someone expect of me from here, but then I've never tried to talk to the lecturer. I just sit with my paper and think what can I do. There's something more, but I don't know that something...

S: You see it's so difficult to perform like other students, you know, unless we have only the English lectures. But where the medium of instruction is Afrikaans., after the lecture you did not hear anything, you are more confused. You have to sit down and translate whatever was given so that you can get the notes, and then start learning.

S: Ja. like if you go and check the courses which I failed. its because its the Afrikaans. which I have no interest. So I decided I should drop this course because its a lot of work and its given in Afrikaans. , the homework and all of that So I said no, I can't do that , so I tell myself, I might go and do it at another institute.
I: Is there support that they give you to bridge your Afrikaans. or to teach you Afrikaans.?
S: It is there, if a person takes the Basiese Afrikaans., but they complain. It takes your time the little space which is there. It is very difficult for a person to learn a language, and at the same time learn a subject. A language on its own , you have to put a lot of effort, and in a subject. So this is practically impossible, for one to learn the language and at the same time learn the contents of a course.

I: As jy so terugdink aan die swottery, was dit vir jou baie anders as wat dit op skool was?
S: Definitief. Die een ding van die universiteit, hulle gee vir jou baie oop ruimte, eie idees. Op skool: hier is die feite, swot hom koud. Op universiteit: hier is die feite, kyk wat jy daarmee kan doen, en bring jou eie gedagtes saam. Ek het baie daarvan gehou. Ek hou mos van my eie - ek hou nie van hierdie koudswottery nie. Dit was vir my irriterend van skool. Op universiteit het hulle gesê hier's die feite, kry jou handboek en ander bronne, jou eie idees,maak opsommings skryf met hulle eksamen. Dis wat ek **baie** van gehou het.

S: By my werk dit so. Sênou ek verstaan iets nie, dan gaan ek liewers na 'n ander persoon, nie 'n dosent nie, maar 'n vriend wat hom verstaan. Daai persoon gaan dit ver duideliker maak. Want nee kyk jy is 'n bietjie, jy wil nie vir die man vra ek verstaan dit **nog** nie, terwyl vir 'n vriend kan jy sê ek verstaan nie, verduidlik hom **weer**. Dit wil jy nie vir die dosent vra nie, want hy dink, "ek het dit noual 2 keer verduidelik is sy nie net plein stupid die vroumens nie?" So ek verkies eintlik om vir 'n vriend te loop vra wat ek nie verstaan nie.

I: Het julle ooit in groepe saam die werk bespreek na die brugprogram?

S: Nee. Ons het soms 3 saamgepraat, maar meestal net ek en die een wat ek vra. Een ding van Stellenbosch se mense, hulle is baie kompeterend en as jy kennis besit, jy gaan baie sku wees met wie jy die kennis gaan deel. Daais nou een ding. Nee, jy kom op Stellenbosch b. jy vra vra iemand om jou iets te verduidelik. Die persoon verduidelik, maar jy kan sien die persoon is baie reluctant om vir jou werklik die ding te verduidelik. So dit sal maar meestal net jou naaste vriende wees wat vir jou die goeters sal verduidelik.

I: Dink jy daar is iets in die stelsel wat dit aanwakker of dink jy it kom van skool af.

S: Ek dink dit kom van skool en ek dink baie kinders wat daar kom, het ek opgelet, se ouers was ook daar. En nou...my ma wil hê ...my ma het so goed gevaar en nou moet ek ook goed vaar. As gevolg daarvan, van die druk van die ouers kompeteer hulle.

I: Was daar druk van jou ouers?

S: Nee, glad nie

I: Het hulle jou aangemoedig

S: Ja ... hoe sal ek nou sê ... ek is mos van daai soort, ek is baie allenerig. Ek hou nie van te veel geneul nie ... ek **weet** wat ek doen. Toe ek die dag op Stellenbosch stap, toe sê ek vir myself: hierdie ding gaan ek in drie jaar klaarmaak, nie vyf nie, nie ses nie, drie jaar en hy moet net klaarkom.

I: Dink jy dit is deel van jou persoonlikheid of wou jy iets bewys?

S: Nee, ek as persoon, ek hou nie van failure nie.

I: As jy kyk na die tyd wat jy aan jou studies spandeer, dink jy daar is 'n balans tussen die tyd wat jy insit en jou punte?

S: Wow! - as ek dink aan tyd... Ek het geleer al wat jy insit gaan jy uitkry. As ek vir 'n toets nie te intens geswot het nie, dan verwag ek nie te goeie punte nie. Maar soos wat ek insit, so kry ek min of meer.

I: Hoe voel julle oor die algemeen - die tyd wat julle insit in julle swottings is die punte wat julle kry, stem dit ooreen?

S: Ja – eers soos in eerste jaar, ek het so baie in my werk ingesit en wat ek uitgekry het, was nie goed nie. Ek weet nie miskien was my studiemetodes verkeerd, maar ek het omtrent alles geleer en dit het my glad nie baie gehelp nie.

I: En nou – is dit beter?

S: En nou is dit soort van jy – jy verstaan van sommige werk en jy leer die ander vakke wat jy moet ken, en dis hoe jy deurkom. Dis hoe ek nou leer – soort van jy begin nou verstaan die werk en dan – ja soort van verstaan dit en doen meer somme as wat jy moet doen. Probeer verstaan die werk is beter as wat jy enige iets anders doen.

S: Ek dink hulle konsentreer meer hier op probleme oplos. Jy moet die goed kan oplos, nee – nie die teorie – okay die teorie verstaan maar hulle sal nie eksamineer in die teorie nie.

S: En dis wat al die eerstejaars doen dit nou – nou amper almal– hulle swot nog steeds soos hulle op skool geswot het, maar nou –die laaste semester kom jy eers agter hoe jy eintlik moet swot.

S: Ja, soos hierdie jaar se [...] dosent is vir my swak – ek is jammer om te sê maar hy verduidelik iets nè en jy vra vir hom 'n vraag – nou antwoord hy vir jou met 'n vraag. Ek meen dit werk nie – dit is ons – ons hele klas het opgesê oor die dosent en toe kry ons nog een, maar dit het nie goed gegaan nie. Ons verstaan nie wat hy sê nie, want om die waarheid te sê, het baie mense sy klas begin bunk – ja want hulle kon nie verstaan wat hy sê nie en dis beter as jy op jou eie werk.

I: Hoekom sê jy julle kan nie verstaan nie?

S: Hy verduidelik, maar hy praat met homself soort van. Hy praat daar voor en jy verstaan nie wat hy sê nie, maar vra jy 'n vraag maar dan verduidelik en verduidelik hy, maar jy kan nog steeds nie verstaan nie.

I: Dink jy hy ken sy vak?

S: Ek dink hy ken sy vak baie goed, maar ek dink net hy kan nie verduidelik nie.

S: Maar ek voel, soos ek maar agtergekom het al die menerens en mevrouens hulle verduidelik nogal meestal goed, maar die doktors en die professors, hulle weet nie hoe om te verduidelik nie – hulle – ek weet nie, hulle het 'n probleem. Soos die een dokter wat ons nou het, hy sê as ons nou 'n vraag vra dan sê hy nee jy sal maar daai in jou beroep in seker maar nou uitvind of gaan vra vir daai departement of iets.

S: Ja hulle gee vir jou 'n nog 'n vraag, of hulle sê nie gaan vra vir iemand anders se departement hulle gee net vir jou die werk om te doen, ek weet nie. Hy...

S: Of hulle sê net hulle weet nie, of hulle sê aanvaar dit nou maar net so of so iets, dan dink jy maar nou net, maar ek wil verstaan hoekom dit so is en dan gaan jy mos nou beter verstaan.

S: Ek weet nie of dit genoeg is nie, maar jy leer baie keer die teorie, dan is net 30% van die vraestel teorie.

I: So as jy net die teorie leer, kan jy nie deurkom nie?

S: Ja, maar dis eintlik 'n goeie ding, wat hy vir ons geleer het, dat jy van jou beginsels af probleme aanpak en nie net rympies leer dit is so 'n probleem jy doen dit so en so nie.

I: Okay, so wat is jou finale uitspraak?

S: Ons het 'n ontevrede gevoel met die dosent, maar - ek dink hy het vir ons iets goed geleer.

I: So as jy dan nou terugdink, dink jy dit is goed, of moet hy dit anders doen?

S: Die studente is so. As die dosent die probleem nou vir jou gee en hy gee nie lekker klas nie en daai, en jy slaag die vak, agterna gaan jy sê, nee hy was okay gewees. Maar as jy nou druip dan gaan jy net sê nee hy was totaal nie lekker of so nie. Dis maar hoe jy daarna kyk.

S: Nee ek dink nie dis waar nie, ek meen ek sal 'n vak sak, en dan sal ek sê dis my eie skuld dis nie die dosent s'n nie, maar as ek weet ek het hom geslaag en – dan dink ek nog steeds hy het nie vir my goed gegee nie, dan gaan ek weet ek kon beter gedoen het.

S: Die dosent wat ons nou het is amper erger as [...]want sy doen niks somme nie, Sy begin met 'n ding en dan skielik dan gee sy vir jou nog 'n ander ding en dan...So jy voltooi nooit die probleem in die klas nie en môre kry jy nog werk en nog werk en jy kry elke periode nog 'n tut ook.

S: En sy gee vir jou net aanmekaar sulke probleme om uit te werk.

I: Ja?

S: Maar sy gaan nie al die probleme deur wat jy – wat sy vir jou gegee het nie – sy sê net hier is die antwoord, probeer om daarby uit te kom. En ek weet nie eers hoe begin 'n mens in die begin nie, ek bedoel – dan moet jy 'n antwoord kry!

S: En as jy 'n vraag vra dan sê sy, nee, dink 'n bietjie.

I: En dan help sy jou nie dink nie?

S: Sy gaan sê jy moet dit self doen en...

I: Maar sy gee nie vir jou 'n hint of iets nie?

S: Ja, sy gee 'n hint, maar dit help jou nie eintlik nie.

S: Dis nogal moeilik – maar ek weet nie ... Ek sal seker maar harder moet werk.

I: As jy so oor die algemeen dink net oor jou skattings en jou dinge, hoeveel tyd jy insit en hoe jou resultate is, stem dit ooreen ooreen of werk dit nie altyd so lekker nie.

S: Veral ek was nou eintlik teleurgesteld waqnt ek het fisika geskryf nou, verlede Maandag en ek het nou – ek het baie hard ingesit en – en toe – toe was die uitslae nie so goed gewees nie – en dis een van my minder goeie vakke. Ek bestee baie meer tyd daaraan as die ander vakke en ek kry nogsteeds meer by die ander vakke as by die een vak.

I: Dink jy – weet jy min of meer hoekom – of weet jy min of meer wat die probleem is?

S: Ek het myself al die vrae afgevra of dit een of ander tegniek is, of werk dit nou nie reg uit nie, of verstaan ek dit nie goed nie, maar – in my – ek begin in die meeste gevalle verstaan ek die goed, maar is maar net – jy weet nie wat hulle vra nie, maar nogtans dan is my uitslae nie goed nie.

I: Het jy al oorweeg om met een van die dosente te gaan praat - maar nie aggressief nie - en te sê r jy werk baie hard en en te vra of daar iets is wat jy verkeerd doen? Het jy dit al oorweeg?

S: Nee ek het nie – ek het nog net as ek probleme doen, enige probleem was ek nou net – sê maar twee keer daar gewees. Die ding is die hoekom mens so min daarnatoe gaan is – is seker maar omdat jy dink dis maar net 'n paar ekstra krediete dis seker maar nie te goed om so te wees nie want jy – dis eintlik 'n negatiewe ding vir my om dit so te doen.

5: What hinders or helps you with your studies? What influences your progress - either positively or negatively?

S: Well, of course the problem is that I'm too far from home.

I: So you miss your people?

S: Ja I miss them. So here I actually have problems, not only the fact that I'm too far, missing my people, but to be honest, I'm always worried about my children. I don't like the way they are, where they are - especially the school. I can see how much I'm struggling, and I am sure they ... the schools that they are attending ... if I have to be here for all this time and they are continuing to be there, they also find the same problems with there studies in future. I'm always worried about that.

S: I had problems last semester of course with lecturers sometimes, or doctors, I don't know sometimes it's also the way you relate to people. I suppose I found that it is a problem that the language policy of this University is Afrikaans, and sometimes someone will just come to the lecture hall and start from A to Z it is all Afrikaans, and then I'll be seated there. So I just don't attend anymore.

S: Sometimes there was a time when I decided to just quit Afrikaans. classes, I just don't go there. But then there also was a day when the people announced a test, so I missed on that, because I didn't go, and they said I have no reason not to be there, so that one was out. I just got my zero marks for that. But then, so I told myself, what is the use I go there, I just sit, and I feel bad when I consider this person is **explaining** something to others and I don't get a word. So sometimes I go there.

S: Even the announcements, some one who decides to announce everything in Afrikaans. in class so I just ... "oh please can you ... ? also just like it was getting too much please please every day ... "Sorry, my dear, you are in the wrong university. The language policy of this University is Afrikaans, and I'm doing what is expected of me". Oh I felt very bad from then, I went straight to the telephone box and I phoned my own people. I just couldn't believe it. But otherwise, like yesterday I don't go there.

S: Whenever I miss something I can ask the lecturers. If I miss something, maybe someone was trying to explain something, and I, my Afrikaans is that I get one word here and there, but mainly not getting everything. Sometimes when I miss then I just ask, they are helping, so I don't think I have problem with the lecturers

S: My negative influence was actually the stress which I experience, not only from the workload and all that, it is also the stress that I place on myself. It really affects all my academic performance.

I: What do you do about it?

S: There's a lot I try to do. I try to get out a lot.

I: Is it your goals that put the stress on you? or your parents/

S: Well yes my goals, but not really my parents, rather other people who know me in general who just expect..and sometimes I just wonder, why am I here..?

I: Anybodyb else?

S: Well I'm one of the unfortunate people. I like my education, but it is unfortunately that I come from a very poor background. And although I was able to get in was when my mother expected me to come as the breadwinner. So what I'm doing is I'm working, just to get some bucks to send it home. But then, things don't always go as planned. That's the pressure that I expect from home time and again when they call and they say, there is no food at home, that's the pressure on me. Because I know when my mother says that, she really needs it, you know. With that pressure sometimes I pray that I will try to survive until I finish. But then there are times ...

I: But she wants you to stay?

S: Yes she is really ... she is really committing to me studying, but then she doesn't understand when I talk of the situation ...

S: I wanted to say what he just said - really the stress, the pressure that you get from home. Like I know my mom is living in a shack. I know that I have to complete the degree, I have to work for my mom, at the same time I think what about if I don't ... - .what then I wont get a chance to do what I want to do for my mom, and what am I going to do as a black woman and I ask myself how am I going to get a job? But at the same time, it encourages me that I should study very hard to make sure that I take her out of the shack, and bring her in a house. So it does have a stress for me, at the same time it encourages me.

I: Anything else?

S: They have a good structure, and I gain a lot form that content. But as much as there is a good structure, there is too much work. I can't see a chance when you can relax for an hour or letting

your work and sleep. Like for this week we have to hand in three assignments, and all those assignments demand beyond 7 hours of your time. Not counting the preparation stage and all that. Then you have to push the work you get in classes aside. But then the other pos. influence I have mentioned is the availability of study materials. They are quite in abundance and there are libraries, and the libraries are of high quality, and well updated. I should say that has a pos. influence to me. Computers, some institutions they don't have computers, they have to type assignments, Now I learn what is computer typing.

S: Another positive thing is the basic support that I get form the ADP. Because at that time I really felt otherwise. But they told us that if you think that you can, you are right, if you think that you can't. you're still right. So I think that I can, then I go and I study.

S: So another point is the interest of my family. that is actually the main reason why I am here, because I don't want to disappoint them. There's really a need to prove myself to them in a way. and show them I'm actually making something of my life.

I: Anybody else?

S: Also like, if you look at your life holistically - there are some things that you need. You want to express yourself. We don't have that chance to express ourselves. There's no cultural day which you get here where you can do a Zulu dance. Where students go for dances, now we have to adapt to go there for a dance, for wine-tasting, but those little things I think they do affect me. I went to a historically black institute like the college where I was studying. and there are a lot of things that we used to do on Saturdays, you don't find them here.

S: Ja the negative, was this racial tension. It is here, and really it does get to you. No it is like sometimes you even see the way they look at you, I remember, one day I went to church, and there were no chairs then I sat next to the other white person, and she shifted away from me! Some way you see...how am I .. you see.

S: That's not something that you can really pinpoint, because the person does not say anything ... but that gives you a message, that you are not accepted.

I: Any more - positive or negative?

S: Some of the lecturers here they do check one's face and they use it for whether marking or doing whatever. I don't know but when I start to scrutinise this thing, it is something which is there. Some lecturers are very objective but the some are very subjective you know when you put something on a paper, he will more check your name before he read it out and then give you a mark and that counts a lot for us. I mean there are things which you know that when you take someone's script, some of the other guys' scripts – the marking and the course work. To me some markings they are not easy to believe, like you can see this is point number 1 this is point number 2, you know that essay type of thing. Then you can tell the quality between the two people – then that's where the lectures subjectivity plays a role

I: Yes?

S: And for some lecturers you know that you cannot obtain beyond 60 because of you being you. But as students we do interact with lecturers and there are times where one maybe for some reason get to ask the question from the lecturer or you question something from the lecturer then he takes it with an attitude and then it emanates from that.

I: Suppose you thought you are going to get 70 for an essay and you get 40, is it just a mark or is there an explanation.

S: No even when it comes to assignments, say you do an assignment and submit it, when it comes after marking it, when you see the comments its very few comments but you have a low mark now. Like this is not what I expected – then it does not say what is really expected. No – ja it's a very difficult thing. And even when you go and complain – like say a lecturer makes a mistake, he calculates your mark wrong, and then you go and question it –the lecturer might have made a mistake here and there. The lecturer concerned will not be happy. There is always like when you question such things there is always like a clash which starts to takes place between you and the lecturer. Then sometimes you go and write that test and the exam and then you know that he is going to fail you – and its true, when you come back you'll see a fail.

I: Do you experience the same thing.

S: No, but I know of individuals who were victims – it doesn't mean that they do this thing to everybody - to some individuals yes.

I: Can we have some other positive or negative influences?

S: I think the atmosphere at the university of Stellenbosch is a problem. Just the atmosphere is like there is a difference when you go to UCT or UWC then you see black faces, you see people – you speak your language. Here you are like – you are being put in a bottle you can't like – you can't do anything here, you see when – even when you go on this well you can see some people looking somewhat surprised.

S: I mean even when you go to functions some of us we have – we don't feel comfortable to go to this functions. They look at you – but in a warm place they will help you like hey, you should do this like that and this like that – and start – start learning.

S: The thing is that no – we are not saying that everybody is like that – I've got a lot of friends. We had this workshop last year then we were with this white people and Coloured people and we spoke out from there and then we sort our things there and just from there, they are my friends. Not all of them are negative, we do have white friends a lot of them – but there are some who are still traditional.

I: As julle dink aan goed wat positief en negatief, inwerk op julle studie, wat help en wat hinder julle?.

S: Dat ek net hier support kry van vriende.

S: Ja familie en vriende en die mense waarmee jy elke dag saam met – soos ek nou saam met 'n room mate weer elke dag leef en ons moet mekaar verstaan jy weet.

S: Especially with travelling students away from all the other students. If you were a group close to each other I suppose its different because then your social life counts, but when your academic work counts that's the – its like sort of a medium of communication and constantly you know reminding each other about that...

S: Its like we friends now – we will like if the one is studying we don't have to feel bad if the other friend is like going out, because we all studying at the same time. So it helps in that way also.

S: One other thing I think that's – that's very nice on this campus is that we all studying the same thing and we all going in one direction whereas over there it is completely diverse, I mean I could be staying with someone that doesn't study medicine that studies something completely different – whereas if you staying over here you know this person is studying medicine and I mean the environment here is based on that you know what I mean. There is no other external distractions there or anything, you know that this is what you studying and this is what everything is about, whereas over there it is away from us, I mean in your first year you don't really know what you studying yet, because there is no – to a certain extend there is no relation to the main campus, whereas over here we know this is what we doing and so forth, so I think this being here helps quite a bit whereas in your first year you tend to think – this is not really what I want to do as such, whereas if you come over here, you know this it.

I: Do you ever discuss work after class or when you are together?

S: Yes.

S: It depends.

S: Everybody I would know is just okay, Now I am finding it real harder, I would just say complain and go back.

I: Okay apart from this complaining are you actually do you ever explain things to each other?

S: Well the thing is the work is not easy, so you can't really say I understand everything so I am on my own, there is constantly something that crops up along the way and...

I: And do you discuss that?

S: Yes – yes naturally.

S: It is a good thing if you stay in a hostel

S: In die onmiddellike omgewing ja.

S: Ja but there is – you know, everybody. When it comes to study weeks and than everybody is studying.

S: It puts you in a mood of – you know to study and if you have a problem you can go to the very next room and ask somebody, but if you like us, we down in the Cape Flats and there, if you have a problem you have to phone or drive somewhere or if you have a pack of notes – certain pack of notes then you have to go somewhere and photocopy that and it cost you – and you know all the little things help, but I suppose you can't do anything about that problem, its just us saying now those are one of the negative you know aspects about travelling and not staying on the campus like a specific campus like the medical school.

I: Are there any people who are in other years - wat in die ander jaargange is wat naby jou bly of is daar nie enige sulke mense nie.

S: No friends are – you know that's no problem – people here are pretty friendly its just you know, certain people like certain things and doing certain things at certain times, but we for instance who wear – the boys in our class we like playing soccer, and to this people here soccer is not in.

S: Ja not everybody knows about soccer and we grew up with soccer so soccer is obviously you know our first choice of sport and then one day we played in the sportsaal upstairs – in the studente sentrum and then we were politely asked to leave because we not suppose to play soccer in there, but you can play basket ball there, you can play badminton there and everything, but why not soccer —we played with a soft ball, with a plastic ball and I mean we can't break anything with a plastic ball and we were told to leave. Then we decided we going to play on the tennis court because there was no nets, nobody uses the tennis court and then we were told to leave from there – we have to go to this field. We went to the field and they told us after playing a couple of matches they told us no this is the hockey field we can't play on this field we have to go to – the field that's the furthest of everything.

I: Goed, net om dan heeltemal af te sluit, enige ander voorstelle wat julle wil maak oor enige iets?

S: Nee ek bedoel soos in saans agtuur dan gaan hier niks meer aan nie, dan is die kafee toe en hier is niks verder nie.

I: Hoe laat maak julle biblioteek toe?

S: Sesuur.

S: That's another thing.

S: For us who travel its very-very poor because we have to leave here at about six, just to go home to go and study and when you get home you can't even study at home, because there are like eight people in your family and how do you study at home, so we prefer to study here but then the library closes and then you have to sit in your car where you are alone and the electricity, sounds, and everything.

S: Ja its not always you know its not safe like that and so on.

S: Well I don't care about that, but...

I: When you work in the library?

S: No you feel quite safe in the library but six o'clock when it closes you have to go down to first floor and sit in one of the...

S: Lesing lokale

I: O! daardie groot lesing lokaal.

S: Ja like one of the – and I say when I am alone in a room like this at say nine o'clock or even, I am not going to feel nice to go walking down and definitely not – so I mean I think that should basically be changed